APPLICATION FOR FINANCIAL ASSISTANCE
Revised 4/99

IMPORTANT: **Please consult the "Instructions for Completing the Project Application" for assistance in completion of this form.**

SUBDIVISION: Village of Fairfax, Ohio **CODE#** 061- 25942

DISTRICT NUMBER: 2 **COUNTY:** Hamilton **DATE** 09 /19/08

CONTACT: Jennifer Kaminer, Village Administrator **PHONE #** (513) 527-6503

(THE PROJECT CONTACT PERSON SHOULD BE THE INDIVIDUAL WHO WILL BE AVAILABLE ON A DAY-TO-DAY BASIS DURING THE APPLICATION REVIEW AND SELECTION PROCESS AND WHO CAN BEST ANSWER OR COORDINATE THE RESPONSE TO QUESTIONS)

FAX : (513) 271-4178 **E-MAIL:** jkaminer@fuse.net

PROJECT NAME: Wooster Pike Project

SUBDIVISION TYPE
(Check Only 1)
__1. County
__2. City
__3. Township
X 4. Village
__5. Water/Sanitary District
(Section 6119 O.R.C.)

FUNDING TYPE REQUESTED
(Check All Requested & Enter Amount)
_X_1. Grant $~~2,407,182~~ 1,403,875
__2. Loan $_____
__3. Loan Assistance $_____

PROJECT TYPE
(Check Largest Component)
_X_1. Road
__2. Bridge/Culvert
__3. Water Supply
__4. Wastewater
__5. Solid Waste
__6. Stormwater

TOTAL PROJECT COST: $~~4,723,714~~ 2,752,697 **FUNDING REQUESTED:** $~~2,407,182~~ 1,403,875

DISTRICT RECOMMENDATION
To be completed by the District Committee ONLY

GRANT: $1,403,875 **LOAN ASSISTANCE:** $_____
SCIP LOAN: $_____ **RATE:**_____% **TERM:** _____yrs.
RLP LOAN: $_____ **RATE:**_____% **TERM:** _____yrs.

(Check Only 1)
___State Capital Improvement Program
X Local Transportation Improvements Program
___Small Government Program

OFFICE OF NEW BURLINGTON
COUNTY ENGINEER
2008 SEP 19 PM 3:08

FOR OPWC USE ONLY

PROJECT NUMBER: C_____/C_____
Local Participation _____%
OPWC Participation _____%
Project Release Date: _____
OPWC Approval: _____

APPROVED FUNDING: $_____
Loan Interest Rate: _____%
Loan Term: _____years
Maturity Date: _____
Date Approved: __/__/__
SCIP Loan _____ **RLP Loan**

1.0 PROJECT FINANCIAL INFORMATION

1.1 PROJECT ESTIMATED COSTS:
(Round to Nearest Dollar)

		TOTAL DOLLARS	FORCE ACCOUNT DOLLARS
a.)	**Basic Engineering Services:**	$ 285,967.00	NO JDC
	Preliminary Design $ ~~100,082.00~~		
	Final Design $ ~~142,983.00~~		
	Bidding $ ~~14,305.00~~		
	Construction Phase $ ~~28,597.00~~		
	Additional Engineering Services *Identify services and costs below.	$ 35,000 .00	NO JDC
b.)	**Acquisition Expenses:** Land and/or Right-of-Way	$ 1,647,500 .00	NO JDC
c.)	**Construction Costs:**	$ 2,485,802 .00 — OK JDC	
d.)	**Equipment Purchased Directly:**	$ .00	
e.)	**Permits, Advertising, Legal:** (Or Interest Costs for Loan Assistance Applications Only)	$ 1,550 .00	NO JDC
f.)	**Construction Contingencies:**	$ 266,895.00 — OK JDC	
g.)	**TOTAL ESTIMATED COSTS:**	$ ~~4,722,714.00~~ 2,752,697 JDC	

***List Additional Engineering Services here:**
Service: **Cost:** $ see above

Since this project will be an LPA project through the Ohio Department of Transportation, the Project Development Process (PDP) will need to be followed. We are anticipating this project will be classified as a Minor Project and will follow the 10 step process. We have performed a majority of the public involvement per ODOT standards, but the environmental studies in the Minor PDP still need to be performed.

1.2 **PROJECT FINANCIAL RESOURCES:**
(Round to Nearest Dollar and Percent)

		DOLLARS		%
a.)	Local In-Kind Contributions	$ .00		
b.)	Local Revenues	$ ~~322,516.00~~	165,162 JDC	6%
c.)	Other Public Revenues	$ .00		
	ODOT	$ .00		
	Rural Development	$ .00		
	OEPA	$ .00		
	OWDA	$ .00		
	CDBG	$ .00		
	OTHER CMAQ	$ ~~1,993,016.00~~	1,183,660 JDC	43%
	SUBTOTAL LOCAL RESOURCES:	$ .00		
d.)	OPWC Funds			
	1. Grant	$ ~~2,407,182.00~~	1,403,875 JDC	
	2. Loan	$ .00		
	3. Loan Assistance	$ .00		
	SUBTOTAL OPWC RESOURCES:	$ ~~2,407,182.00~~	1,403,875 JDC	51%
e.)	TOTAL FINANCIAL RESOURCES:	$ ~~4,722,714.00~~	2,752,697 JDC	100%

1.3 **AVAILABILITY OF LOCAL FUNDS:**

Attach a statement signed by the Chief Financial Officer listed in section 5.2 certifying all local share funds required for the project will be available on or before the earliest date listed in the Project Schedule section.

ODOT PID# _____ **Sale Date:**

STATUS: (Check one)

- **Traditional**
- **X Local Planning Agency (LPA)**
- **State Infrastructure Bank**

2.0 PROJECT INFORMATION

If project is multi-jurisdictional, information must be consolidated in this section.
This project is in the Village of Fairfax and in the Village of Mariemont. The Village of Fairfax is taking the lead on the project and has received preliminary approvals from The Village of Mariemont, the Ohio Department of Transportation as well as the Southwest Ohio Regional Transit Authority.

2.1 PROJECT NAME: Wooster Pike Project

2.2 BRIEF PROJECT DESCRIPTION - (Sections A through C):

A: SPECIFIC LOCATION:

The main project starts at the western side at the intersection of US 50/ Wooster Pike and Meadowlark Lane and proceeds in an easterly direction along Wooster Pike and ends at the Mariemont Corporation limit. In addition, work will be performed on Grace Avenue, Southern Avenue, Germania Avenue, Lonsdale Avenue, Watterson Road, Simpson Road, Camden Avenue, Carlton Avenue and Belmont Avenue.

PROJECT ZIP CODE: 45227

B: PROJECT COMPONENTS:

The Wooster Pike Project in the Village of Fairfax has the components of a 'Road Diet', Access Management including Access Roads, Signal Upgrades, safety upgrades to comply with the Americans for Disability Act, Utility Relocation, Transit Upgrades and Traffic Calming. The majority of these improvements will be along the US 50/Wooster Pike alignment.

C: PHYSICAL DIMENSIONS / CHARACTERISTICS:

US 50 in the Village of Fairfax has been designated as a Central Business District and thus the speed limit will be reduced to 25 MPH on Wooster Pike between Southern Avenue and the Mariemont Corporation Line. The project length is 0.56 miles. The project will take the existing 40' of pavement from face of curb to face of curb and convert it from four-10' lanes to 3-12' lanes with a new gutter and curb replacement section. The storm water drainage will only be rebuilt as necessary. The sidewalk and curb ramps will be brought up to ADA standards as they are currently deficient. The above ground utility poles will be condensed to one side of the pavement, thus eliminating over 80% of the utility poles. No underground utility relocation is anticipated with the project. Bus stop pullovers and an unloading/loading zone will be constructed to encourage these functions to be performed out of the travel lane. A transit layover area has been added to the project area. The signals, which are decades old, have been improved from pretimed signals that had phases that were unused during peak hours, to two-phase actuated signals, thus eliminating delays and frustration of the drivers. Five residential streets will be cul-de-sac'd to eliminate cut-through traffic. Speed humps will be installed on residential streets that will remain open to deter additional cut-through traffic. Watterson Avenue is a primary residential cut-through roadway. Thus, a roundabout will be constructed at the major intersection of Watterson Avenue and Bancroft Avenue to provide traffic calming and geometric improvements at the intersection where through movements of Watterson Avenue is skewed at a 47 degree at the intersection. The cul-de-sac on the streets will not occur at the Wooster Pike intersection, but rather this will occur at approximately one property north, thus giving the business property continued access to Wooster Pike. However, if these businesses have access to the street 'stubs', then their driveways on Wooster Pike will be closed and

at best, a right-in and/or a right-out will be provided. New driveways for businesses will be to a standard width. Both driveways and the 'stub' streets will be realigned to intersect Wooster Pike at 90 degrees. As a result of public meetings held the summer of 2008, three parcels will be purchased to make way for the Spring Street Extension Access Road on the north side of the corridor. This Access Road will provide access to six business parcels that will have their access on Wooster Pike closed, as well as provide replacement parking for on-street parking that is being removed due to the project. One additional parcel will be purchased to provide access to the businesses along the south side of the corridor. Additional property owners have agreed that based on future redevelopments of adjacent parcels, their access will be closed on Wooster Pike and cross easements will be put in place for shared access points. Landscaping will be added along the project corridor and to the cul-de-sac'd streets to provide screening between the residential and business districts. Funding for the landscaping between the US 50/Wooster Pike/Meadowlark Lane intersection and the US50/Wooster Pike/ Southern Avenue intersection has already been obtained.

D: DESIGN SERVICE CAPACITY:

Detail current service capacity vs. proposed service level.

The total delay for the existing AM and PM peaks for both the US 50/ Wooster Pike and Meadowlark Lane US 50/ Wooster Pike and Watterson Road intersections is 72.5 seconds of delay. The total delay for the proposed AM and PM peaks for both intersections is 69.9 seconds of delay. This is after going from a four-lane section with two lanes in each direction, to a three lane section with one lane in each direction.

Road or Bridge: Current ADT 21,759 (ODOT) **Year:** 2005 **Projected ADT:** _____ **Year:**

Water/Wastewater: Based on monthly usage of 7,756 gallons per household, attach current rate ordinance. Current Residential Rate: $_____ **Proposed Rate: $**

Stormwater: Number of households served:

2.3 USEFUL LIFE / COST ESTIMATE: Project Useful Life: 25 Years.

Attach Registered Professional Engineer's statement, with original seal and signature confirming the project's useful life indicated above and estimated cost.

3.0 REPAIR/REPLACEMENT or NEW/EXPANSION:

TOTAL PORTION OF PROJECT REPAIR/REPLACEMENT	$ 1,726,048 .00
TOTAL PORTION OF PROJECT NEW/EXPANSION	$ 759,754.00

4.0 PROJECT SCHEDULE: *

		BEGIN DATE	END DATE
4.1	Engineering/Design:	01/01/07	05/01/ 10
4.2	Bid Advertisement and Award:	05/01/10	06/15/10
4.3	Construction:	07/01/10	12/01/11
4.4	Right-of-Way/Land Acquisition:	07/01/10	12/31/10

We understand that our project scheduled, which is determined by the limitations of our CMAQ funding guidelines, puts this project beyond the funding cycle of this round of projects. However, we are requesting funding acceptance now so that we will have a fully funded project before the project is programmed through ODOT, which is anticipated in January, 2009.

* Failure to meet project schedule may result in termination of agreement for approved projects. Modification of dates must be requested in writing by the CEO of record and approved by the commission once the Project Agreement has been executed. The project schedule should be planned around receiving a Project Agreement on or about July 1st.

5.0 APPLICANT INFORMATION:

5.1 CHIEF EXECUTIVE

OFFICER	**Theodore W. Shannon, Jr.**
TITLE	**Mayor**
STREET	**5903 Hawthorne Ave.**
CITY/ZIP	**Cincinnati, OH 45227**
PHONE	**(513) 527 -6504**
FAX	**(513) 271- 4178**
E-MAIL	**tsha@fuse.net**

5.2 CHIEF FINANCIAL

OFFICER	**Walter Raines**
TITLE	**Clerk-Treasurer**
STREET	**5903 Hawthorne Ave.**
CITY/ZIP	**Cincinnati, OH 45227**
PHONE	**(513) 527-6505**
FAX	**(513) 271-4178**
E-MAIL	**wraines@fuse.net**

5.3

PROJECT MANAGER	**Jennifer Kaminer**
TITLE	**Administrator**
STREET	**5903 Hawthorne Ave.**
CITY/ZIP	**Cincinnati, OH 45227**
PHONE	**(513) 527-6503**
FAX	**(513) 271-4178**
E-MAIL	**jkaminer@fuse.net**

Changes in Project Officials must be submitted in writing from the CEO.

6.0 ATTACHMENTS/COMPLETENESS REVIEW:

Confirm in the blocks [ ] below that each item listed is attached.

[X] **A certified copy of the legislation by the governing body of the applicant authorizing a designated official to sign and submit this application and execute contracts. This individual should sign under 7.0, Applicant Certification, below.**

[X] **A certification signed by the applicant's chief financial officer stating all local share funds required for the project will be available on or before the dates listed in the Project Schedule section. If the application involves a request for loan (RLP or SCIP), a certification signed by the CFO which identifies a specific revenue source for repaying the loan also must be attached. Both certifications can be accomplished in the same letter.**

[X] **A registered professional engineer's detailed cost estimate and useful life statement, as required in 164-1-13, 164-1-14, and 164-1-16 of the Ohio Administrative Code. Estimates shall contain an engineer's original seal or stamp and signature.**

[X] **A cooperation agreement (if the project involves more than one subdivision or district) which identifies the fiscal and administrative responsibilities of each participant.**

[N/A] **Projects which include new and expansion components and potentially affect productive farmland should include a statement evaluating the potential impact. If there is a potential impact, the Governor's Executive Order 98-VII and the OPWC Farmland Preservation Review Advisory apply.**

[X] **Capital Improvements Report: (Required by O.R.C. Chapter 164.06 on standard form)**

[X] **Supporting Documentation: Materials such as additional project description, photographs, economic impact (temporary and/or full time jobs likely to be created as a result of the project), accident reports, impact on school zones, and other information to assist your district committee in ranking your project. Be sure to include supplements which may be required by your *local* District Public Works Integrating Committee.**

7.0 APPLICANT CERTIFICATION:

The undersigned certifies that: (1) he/she is legally authorized to request and accept financial assistance from the Ohio Public Works Commission; (2) to the best of his/her knowledge and belief, all representations that are part of this application are true and correct; (3) all official documents and commitments of the applicant that are part of this application have been duly authorized by the governing body of the applicant; and, (4) should the requested financial assistance be provided, that in the execution of this project, the applicant will comply with all assurances required by Ohio Law, including those involving Buy Ohio and prevailing wages.

Applicant certifies that physical construction on the project as defined in the application has NOT begun, and will not begin until a Project Agreement on this project has been executed with the Ohio Public Works Commission. Action to the contrary will result in termination of the agreement and withdrawal of Ohio Public Works Commission funding of the project.

Certifying Representative (Type or Print Name and Title)

THEODORE W SHANNON JR MAYOR

Signature/Date Signed

Theodore W Shannon Jr 6

BARR & PREVOST
ENGINEERING-TESTING

9420 Towne Square Ave. Suite 22
Cincinnati, Ohio 45242

September 18, 2008

Ohio Public Works Commission
District 2
Hamilton County, Ohio

RE: WOOSTER PIKE PROJECT STATEMENT OF USEFUL LIFE

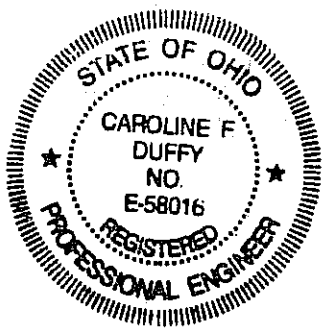
As required by Chapter 164-1-13 of the Ohio Administrative Code, I hereby certify that the Wooster Pike Project will have a useful life of at least 25 years.

CONSTRUCTION COSTS:
The opinion of Project Construction Costs is based on current unit price experience with a 10% escalation factor and is subject to adjustment upon completion of detailed plans and receipt of an acceptable proposal by a qualified contractor.

Respectfully,

Caroline Duffy, PE

Caroline F. Duffy, PE
Senior Traffic Engineer
Barr & Prevost



5903 Hawthorne Avenue
Fairfax, Ohio 45227
Fax (513) 271-4178

Mayor, Theodore Shannon
Telephone (513) 527-6504

"Working Together To Build A Better Community"

September 15, 2008

Mr. William W. Brayshaw, Chairman
District 2 Integrating Committee
Hamilton County Engineer's Office
10480 Burlington Road
Cincinnati, OH 45231

Re: OPWC Funding – Round 23

Dear Mr. Brayshaw:

Please accept this letter as indication that the Village of Fairfax will make available any necessary local funds for the Wooster Pike Project.

It is our intent to primarily use Federal CMAQ (Congestion Mitigation Air Quality) funds previously awarded to support the local share requirement of this project. Any additional funds will be supplemented by the Village of Fairfax General Fund, or other revenue, as allowed by law.

Sincerely,

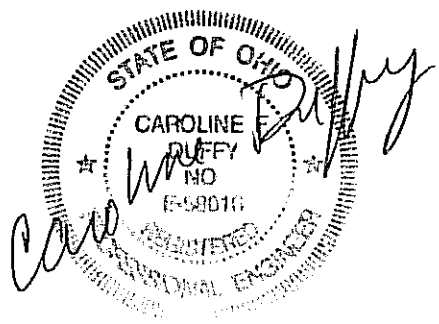
Walter Raines
Clerk-Treasurer
Village of Fairfax

Cost Estimate
Wooster Pike Study
Village of Fairfax, Ohio

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
REMOVALS				
		Avg Unit Price Est.		
Pavement Removed	Sq. Yard	$ 7.80	13936	$ 108,701
Curb Removed	Lin. Ft.	$ 3.85	8160	$ 31,416
Catch Basin Removed	Each	$ 290.00	40	$ 11,600
Walk Removed	Sq. Ft.	$ 1.50	27403	$ 41,105
		Roadway Subtotal	**$ 192,821.30**	
ROADWAY				
		Avg Unit Price Est.		
Clearing and Grubbing	Lump	$ 25,000.00	1	$ 25,000
4" Concrete Walk	Sq. Ft.	$ 6.00	35378	$ 212,268
Curb Ramp	Sq. Ft.	$ 450.00	28	$ 12,600
Combination Curb and Gutter, Type 2	Lin. Ft.	$ 25.00	9245	$ 231,125
Curb , Type 6	Sq. Ft.	$ 20.00	8330	$ 166,600
Retaining Wall	Sq. Ft.	$ 34.25	5100	$ 174,675
Pedestrian Handrail	Lin. Ft.	$ 175.00	340	$ 59,500
Speed Hump	Each	$ 2,500.00	12	$ 30,000
Bus Shelter	Each	$ 10,000.00	1	$ 10,000
		Roadway Subtotal	**$ 921,768.00**	
DRAINAGE				
		Avg Unit Price Est.		
24" Conduit, Type B	Lin. Ft.	$ 71.00	3400	$ 241,400
Catch Basins, No. 3	Each	$ 2,200.00	40	$ 88,000
		Drainage Subtotal	**$ 329,400.00**	
EARTHWORK				
		Avg Unit Price Est.		
Embankment	Cu. Yard	$ 13.00	1286	$ 16,718
Topsoil	Cu. Yard	$ 16.35	644	$ 10,529
Lime	Acre	$ 81.75	0.1	$ 8
Commercial Fertilizer	Ton	$ 382.00	0.70	$ 267
Water	M Ga.	$ 1.50	14	$ 21
Sodding, Reinforced	Sq. Yard	$ 8.75	7926	$ 69,353
Soil Analysis Test	Each	$ 110.00	2	$ 220
Irrigation	Lump	$ 100,000.00	1	$ 100,000
		Earthwork Subtotal	**$ 197,116.48**	
TEMPORARY SOIL AND SEDIMENT CONTROL				
		Avg Unit Price Est.		
Seeding and Mulching	Sq. Yard	$ 1.00	5000	$ 5,000
Perimeter Filter Fabric Fence	Lin. Ft.	$ 2.00	1500	$ 3,000
Commercial Fertilizer	Ton	$ 382.00	0.7	$ 267
Temporary Inlet Protection Filter Fabric Fence	Lin. Ft.	$ 2.50	700	$ 1,750
Repair Seeding and Mulching	Sq. Yard	$ 0.55	250	$ 138
Water	M Ga.	$ 1.50	27	$ 41
	Temporary Soil and Sediment Control Subtotal		**$ 10,195.40**	
PAVEMENT				
		Avg Unit Price Est.		
Microsurface	Sq. Yard	$ 2.00	14957.00	$ 29,914
Asphalt Concrete Surface Course, Type 2, PG64-28	Cu. Yard	$ 110.00	405.20	$ 44,572
ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22	Cu. Yard	$ 250.00	567.28	$ 141,819
Tack Coat	Gallon	$ 1.40	466.67	$ 653
ASPHALT CONCRETE BASE, PG64-22	Cu. Yard	$ 275.00	810.72	$ 222,947
Aggregate Base	Cu. Yard	$ 110.00	608.04	$ 66,884
		Pavement Subtotal	**$ 508,788.83**	
MAINTENANCE OF TRAFFIC				
		Avg Unit Price Est.		
Maintaining Traffic	Lump	$ 20,000.00	1	$ 20,000
Law Enforcement Officer with Patrol Car	Hour	$ 40.00	130	$ 5,200
		Maintenance of Traffic Subtotal	**$ 25,200.00**	
TRAFFIC CONTROL				
		Avg Unit Price Est.		
Ground Mounted Support, No. 3 Post	Lin. Ft.	$ 7.40	700	$ 5,180
Removal of Ground-Mounted Post Support and Disposal	Each	$ 13.65	60	$ 819
Removal of Ground-Mounted Sign and Disposal	Each	$ 11.65	60	$ 699
Sign, Double Faced, Street Name	Each	$ 110.00	14	$ 1,540
Street Name Sign Support, No. 3 Post	Lin. Ft.	$ 10.35	150	$ 1,553
Sign, Flat Sheet	Sq. Ft.	$ 12.15	2160	$ 26,244
Center Line, Type 2, 4" Double Yellow	Mile	$ 1,100.00	0.57	$ 627
Channel Line, Type 2, 4" White	Mile	$ 2,100.00	0.25	$ 525
Edge Line, Type 2, 4" White	Mile	$ 2,100.00	0.06	$ 126
Stop Line, 24"	Lin. Ft.	$ 7.75	228	$ 1,767
Crosswalk Line	Lin. Ft.	$ 5.45	880	$ 4,796
Transverse/Diagonal Line	Lin. Ft.	$ 3.90	285	$ 1,112
Lane Arrow	Each	$ 81.75	36	$ 2,943
		Traffic Control Subtotal	**$ 47,930.00**	

Cost Estimate
Wooster Pike Study
Village of Fairfax, Ohio

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
TRAFFIC SIGNAL AND LIGHTING				
		Avg Unit Price Est.		
Connector Kit, Type II	Each	$ 65.50	60	$ 3,930
Light Pole, Decorative	Each	$ 3,500.00	30	$ 105,000
Light Pole Foundation, 24" x 6' Deep	Each	$ 1,200.00	30	$ 36,000
1-1/2" Duct Cable with Three No. 4 AWG 5000 Volt Cables	Lin. Ft.	$ 3.25	4500	$ 14,625
No. 4 AWG 5000 Volt Distribution Cable	Lin. Ft.	$ 2.25	450	$ 1,013
No. 10 AWG Pole and Bracket Cable	Lin. Ft.	$ 1.00	600	$ 600
Luminaire, Decorative: Type III, 250W, HPS, 480V	Each	$ 500.00	30	$ 15,000
Special - Plastic Caution Tape	Lin. Ft.	$ 0.35	4500	$ 1,575
Conduit, 2", 713.04	Lin. Ft.	$ 9.50	400	$ 3,800
Conduit, 3", 713.04	Lin. Ft.	$ 11.50	400	$ 4,600
Conduit, 4", 713.04	Lin. Ft.	$ 14.50	400	$ 5,800
Conduit, Jacked or Drilled	Lin. Ft.	$ 27.25	300	$ 8,175
Trench	Lin. Ft.	$ 5.00	6000	$ 30,000
Pull Box, 725.08, 18"	Each	$ 800.00	24	$ 19,200
Pull Box, 725.08, 24"	Each	$ 900.00	3	$ 2,700
Ground Rod	Each	$ 130.00	33	$ 4,290
Power Service	Each	$ 4,000.00	2	$ 8,000
Sign, Flat Sheet	Sq. Ft.	$ 12.15	90	$ 1,094
Pedestrian Signal Head, Type A2	Each	$ 500.00	16	$ 8,000
Vehicular Signal Head (LED), 3 Section, 12" Lens, 1-Way, Polycarbonate	Each	$ 650.00	12	$ 7,800
Covering of Vehicular Signal Head	Each	$ 28.25	14	$ 396
Covering of Pedestrian Signal Head	Each	$ 27.00	14	$ 378
Pedestrian Pushbutton	Each	$ 325.00	6	$ 1,950
Loop Detector Unit	Each	$ 200.00	11	$ 2,200
Signal Cable, 7 Conductor, No. 14 AWG	Lin. Ft.	$ 1.65	1500	$ 2,475
Loop Detector Lead-in Cable	Lin. Ft.	$ 1.55	1300	$ 2,015
Detector Loop	Each	$ 1,175.00	18	$ 21,150
Power Service	Each	$ 1,500.00	2	$ 3,000
Power Cable, 2 Conductor, No. 6 AWG	Lin. Ft.	$ 2.25	425	$ 956
Signal Support Foundation	Each	$ 3,000.00	8	$ 24,000
Pedestal Foundation	Each	$ 650.00	2	$ 1,300
Signal Support Type TC-81.20 Design 4 Pole with Mast Arms TC-81.20 Design 3 Design 1	Each	$ 4,500.00	6	$ 27,000
Pedestal 10', Transformer Base	Each	$ 710.00	2	$ 1,420
Controller Unit, Type TS2/A1 with Cabinet, Type TS2	Each	$ 15,000.00	2	$ 30,000
Concrete for Cabinet Foundation	Cu. Yard	$ 1,800.00	2	$ 3,600
Controller Work Pad	Sq. Ft.	$ 72.50	25	$ 1,813
		Traffic Signal Subtotal	**$ 404,853.25**	
MISCELLANEOUS				
		Avg Unit Price Est.		
Construction Layout Stakes	Lump	$ 5,000.00	1	$ 5,000
Mobilization	Lump	$ 10,000.00	1	$ 10,000
Roundabout	Lump	$ 50,000.00	1	$ 50,000
		Miscellaneous Subtotal	**$ 65,000.00**	
		SUBTOTAL		**$ 1,779,305.26**
		15% CONTINGENCY		**$ 266,895.79**
		ESCALATION (10%@2.5 YRS)		**$ 553,497.38**
		SUBTOTAL		**$ 2,599,698.43**
Utility Relocation	Lump	$ 153,000.00	1	$ 153,000
		Miscellaneous Subtotal	**$ 153,000.00**	
Property Acquisition	Lump	$ 1,647,500.00	1	$ 1,647,500
		Miscellaneous Subtotal	**$ 1,647,500.00**	
		SUBTOTAL		**$ 4,400,198.43**
		FUNDING SECURED		**$ 1,993,016.00**
		SCIP TOTAL NEEDED		**$ 2,407,182.43**



Ohio · Kentucky · Indiana
Regional Council of Governments

July 1, 2008

Ms. Jennifer Kaminer
Village Administrator
Village of Fairfax
5903 Hawthorne Avenue
Fairfax, OH 45227

Dear Ms. Kaminer:

I am pleased to inform you that on June 12, 2008 the OKI Board of Directors approved the request from the Village of Fairfax to fund the US 50 project from Meadowlark Drive to the Mariemont Corporate line. The approved amount is $1,993,016 in federal Congestion Mitigation/Air Quality (CMAQ) funds, including $863,200 for the right-of-way phase and $1,129,816 for the construction phase. I anticipate the funds will be available from the OKI sub-allocation of CMAQ funds during fiscal year 2011 for right-of-way and fiscal year 2013 for the construction phase.

Please contact Mr. Edward Moore at ODOT – District 8 in the next 30 days to schedule a field review of the project area. If you have any questions, feel free to contact me.

Sincerely,

Mark R. Paine
TIP Manager

c: Steve DeHart, ODOT – District 8
Edward Moore, ODOT – District 8

720 East Pete Rose Way, Suite 420 • Cincinnati, Ohio • 45202 • Phone (513) 621-6300 • Fax (513) 621-9325 • www.oki.org
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RESOLUTION NO. 4-2008

A RESOLUTION AUTHORIZING THE ADMINISTRATOR AND CLERK-TREASURER TO FILE AN APPLICATION WITH THE OHIO PUBLIC WORKS COMMISSION FOR STATE CAPITAL IMPROVEMENT (SCIP) FUNDS - ROUND 23, AND DECLARING AN EMERGENCY

WHEREAS, road and traffic maintenance are priorities of the Village of Fairfax pursuant to which the Village wishes to perform repairs and improvements on Wooster Pike; and

WHEREAS, the State of Ohio has allowed for the issuance of State Capital Improvement (SCIP) Funds – Round 23 for 2008; and

WHEREAS, the District Public Works Integrating Committee of Hamilton County (DPWIC) is the recipient of State Capital Improvement (SCIP) funds from the Ohio Public Works Commission (OPWC); and

WHEREAS, the Village of Fairfax may apply for funding under the State Capital Improvement Program as part of District 2 (Hamilton County) allocation for road repairs and improvements.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Village of Fairfax, State of Ohio, that:

SECTION I: The Council of the Village of Fairfax does hereby endorse and support the application for Ohio Public Works Commission funds for repairs and improvements to Wooster Pike within the Village of Fairfax.

SECTION II: The Administrator and Clerk-Treasurer are hereby authorized and directed to file an application with the District Public Works Integrating Committee of Hamilton County (DPWIC) for Ohio Public Works Commission funding under State Capital Improvement (SCIP) funds for 2008, and if awarded to implement said program.

SECTION III: The Village of Fairfax hereby requests the District Public Works Integrating Committee (DPWIC) and the Ohio Public Works Commission (OPWC) to consider and fund the referenced application.

SECTION IV: This Resolution is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health, safety and general welfare and shall be effective immediately. The reason for said declaration of emergency is to submit an application for State Capital Improvement (SCIP) funds within the period of application.

Passed this 15th day of September, 2008.

Theodore W. Johnson Jr.
Mayor

ATTEST:

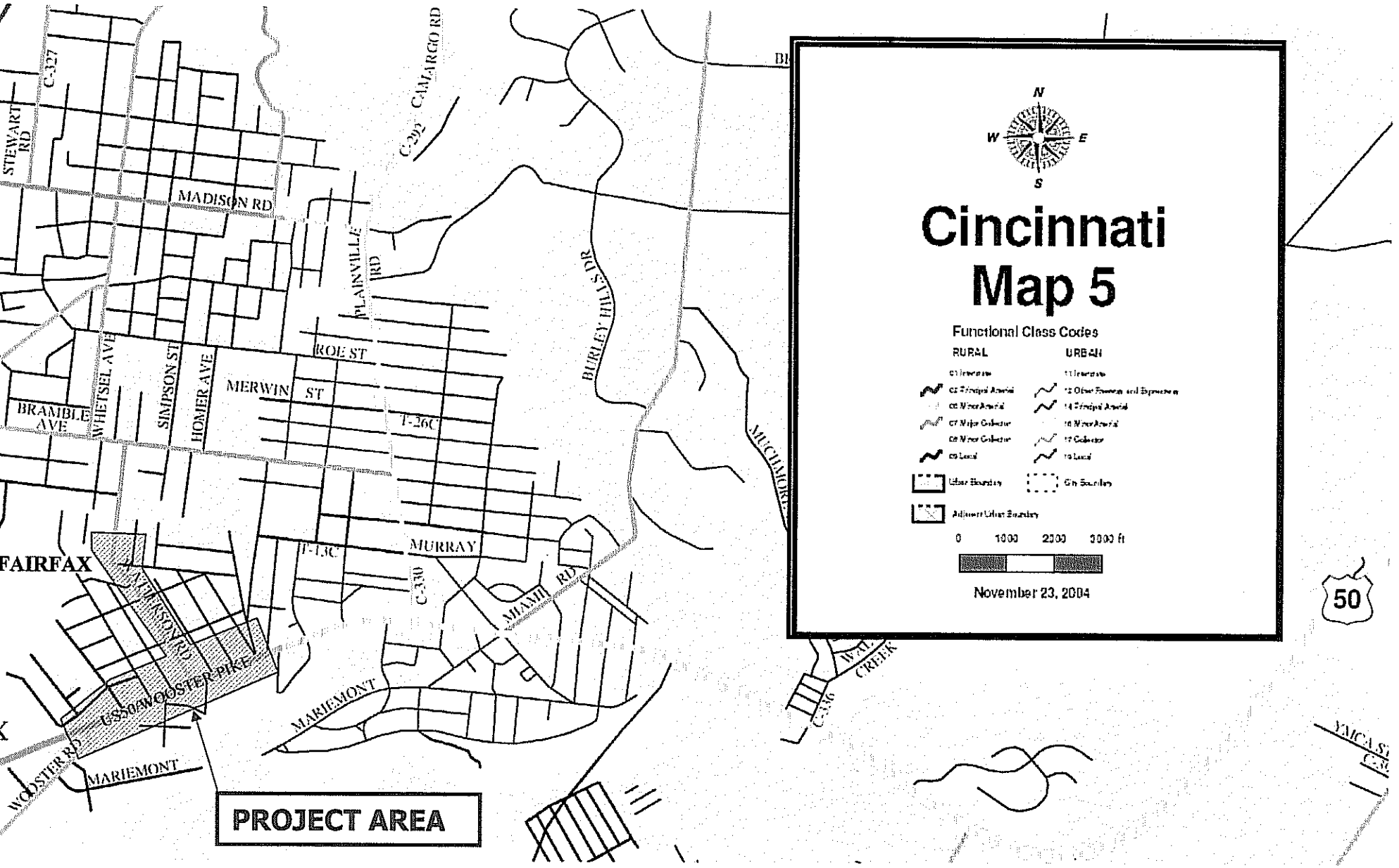
Walter J. Bj Jr.
Clerk-Treasurer

CERTIFICATE

I hereby certify this to be a true and correct copy of Resolution No. 4-2008 passed at a meeting of the Council of the Village of Fairfax on this 15th day of September, 2008.

Walter J. Bj Jr.

Functional Classification: Minor Arterial



RESOLUTION NO. R1-2008

REQUESTING THE DIRECTOR OF THE OHIO DEPARTMENT OF TRANSPORTATION TO DETERMINE AND DECLARE A REASONABLE AND SAFE PRIMA-FACIE SPEED LIMIT ALONG A PORTION OF U.S. 50 IN THE VILLAGE OF FAIRFAX

WHEREAS, Council has requested that a determination be made as to whether the statutory vehicular speed limit established by Section 4511.21 of the Ohio Revised Code on Wooster Pike in the Village of Fairfax (U.S. Route 50), from Southern Avenue to 150 feet west of the Wooster Pike/Meadowlark Lane intersection, is greater than what should be considered reasonable and safe; and

WHEREAS, Barr & Provost Engineering ("Engineer") was requested to make an engineering and traffic investigation of the speed limit upon the above-described section of Wooster Pike; and

WHEREAS, as set forth in the report attached hereto as Exhibit A, the Engineer has determined that the statutory speed limit upon the above-described section of Wooster Pike is greater than reasonable and safe under the conditions found to exist at such location.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Village of Fairfax, State of Ohio that:

SECTION I: In accordance with Ohio Revised Code Section 4511-21(I)(1), the Director of the Ohio Department of Transportation is hereby requested to determine and declare a reasonable and safe prima-facie speed limit on Wooster Pike from Southern Avenue to 150 feet west of the Wooster Pike/Meadowlark Lane intersection.

SECTION II: Upon determination and declaration by the Director of the Ohio Department of Transportation of such reasonable and safe prima-facie speed limit, such speed limit shall become effective upon the posting of appropriate signs by the Village at said location.

SECTION III: It is found that all formal actions of this Council concerning and relating to the adoption of this Resolution were adopted in an open meeting of this Council, and that all deliberations of this Council that resulted in this formal action were in meetings open to the public in compliance with all legal requirements, including Section 121.22 of the Ohio Revised Code.

Passed this 19 day of February, 2008.

Mayor

ATTEST:

Clerk-Treasurer

Village of Mariemont

6907 Wooster Pike
Mariemont, Ohio 45227
(513) 271-3246
www.mariemont.org

April 17, 2008

Village of Fairfax
Village Administrator
5903 Hawthorne Avenue
Cincinnati, OH 45227

RE: Reconfiguration of US 50 Wooster Pike

To Whom It May Concern,

The Village of Mariemont supports the efforts of the Village of Fairfax to reconfigure US 50 Wooster Pike through the Village of Fairfax to a three lane section and that the Village of Mariemont will work with the Village of Fairfax to design the transition at the corporation line between the two villages for the benefit of the traveling public.

The Village of Mariemont also understands that all costs related to this project will be paid for by the Village of Fairfax, including the costs to reconfigure the roadway inside the Village of Mariemont Corporation limits.

If you have any questions regarding this letter please contact the Mariemont Village Engineer, Chris Ertel, at 513-317-2762.

Sincerely,

Dan Policastro
Mayor, Village of Mariemont

CC: Chris Ertel, Mariemont Engineer

Caroline Duffy

From: Jay.Hamilton@dot.state.oh.us
Sent: Wednesday, September 03, 2008 12:54 PM
To: Caroline Duffy
Subject: Re: Wooster Pike Plan

Caroline,
The preliminary plan looks fine. It appears that a considerable amount of access improvements will be made. One thing to remember is that if federal dollars are utilized on this project we will still have to follow the ODOT PDP, but this work and effort will be very helpful in the process.

Thanks,
Jay Hamilton, District 8 Traffic Planning Engineer
505 South SR741
Lebanon, Ohio 45036
513-933-6584
1-800-831-2142 ext9336584

"Caroline Duffy" <cduffy@barreng.com>

09/03/2008 07:46 AM

To <Jay.Hamilton@dot.state.oh.us>
cc '"Jennifer Kaminer"' <jkaminer@fuse.net>
Subject Wooster Pike Plan

Jay,

Attached is the Wooster Pike plan as it stands to date. It incorporates the proposed utility pole line on the south side of Wooster Pike as well as the Spring Street Access Road. Five residential streets have now been cul-de-sac'd based on the public meetings. We have met with a majority of the property owners, both business and residential, as well as SORTA and the Utility Companies. Please review and let me know if there are any other items that we need to address. If we could have your comments back by Monday, September 8, 2008, it would be appreciated.

Thanks,
Caroline

Caroline F. Duffy, P.E.
Sr. Traffic Engineer

Barr & Prevost
2853 Fischer Place
Cincinnati, Ohio 45211
c:(513) 476-6271

Barr & Prevost

9420 Towne Square Drive, Suite 22
Cincinnati, Ohio 45242
p: (513) 936-9400
f: (513) 936-8400
www.barreng.com

[attachment "ODOT Submittal Wooster Pike 090308.pdf" deleted by Jay Hamilton/Planning/D08/ODOT]

METRO

September 18, 2008

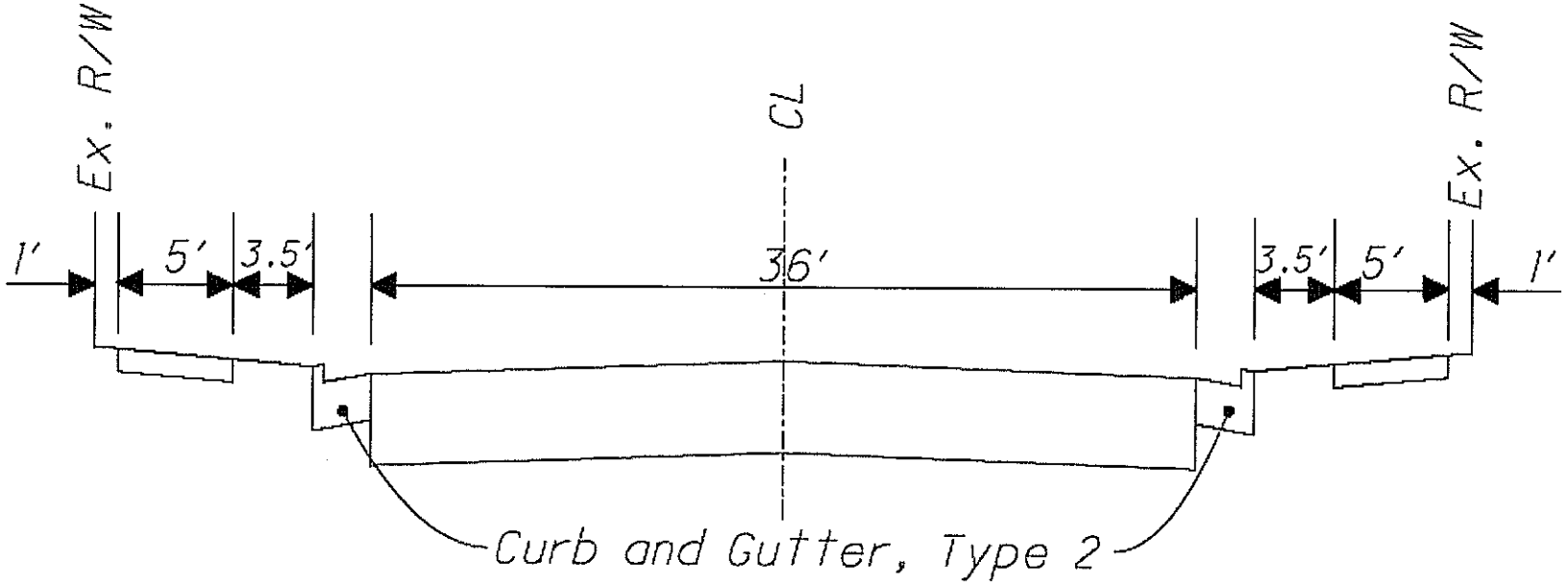
To Whom It May Concern:

This letter is an acknowledgement that Metro is aware of the road improvement plans proposed for Wooster Pike in Fairfax. Metro believes that the proposed improvements will be beneficial for public transit service and for bus passengers in this area.

Sincerely,

Ted C. Meyer
The Metro
Manager of Planning & Scheduling

Wooster Pike Study, Fairfax, Ohio
Typical Section



BARR & PREVOST
ENGINEERING-TESTING

9420 Towne Square Ave. Suite 22
Cincinnati, Ohio 45242

September 18, 2008

District 2 Integrating Committee
Ohio Public Works Commission
Hamilton County, Ohio

RE: WOOSTER PIKE TRAFFIC COUNTS AND USERS CERTIFICATION

As required by the District 2 Integrating Committee of the Ohio Public Works Commission, I certify the following sources of the traffic counts utilized for the Wooster Pike Project. I also certify the counts performed by Barr & Prevost are true and accurate counts.

Wooster Pike Tube Counts: Source: Ohio Department of Transportation website

Side Street Tube Counts on Germania Avenue, Lonsdale Street, Simpson Avenue and Carlton Avenue: Barr & Prevost conducted these counts during the first two weeks of March, 2008.

Turning Movement Counts at US50/Wooster Pike and Meadowlark Lane and US50/Wooster Pike and Watterson Road: Barr & Prevost conducted these counts in the AM and PM Peak Hours during the first two weeks of March, 2008.

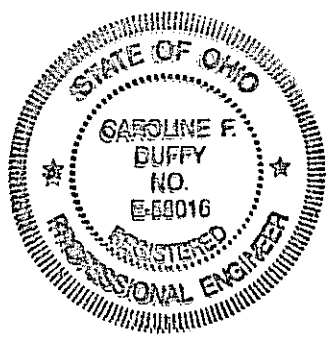
These counts showed the following:

Traffic:	ADT	21,750	X 1.20 =	26,100	Users
Transit:	ADT	3,800	X 1.20 =	4,560	Users

Total Traffic and Transit: 30,660 Users

Respectfully,

Caroline F. Duffy PE



Caroline F. Duffy, PE
Senior Traffic Engineer
Barr & Prevost

BARR & PREVOST
ENGINEERING-TESTING

9420 Towne Square Ave. Suite 22
Cincinnati, Ohio 45242

September 18, 2008

District 2 Integrating Committee
Ohio Public Works Commission
Hamilton County, Ohio

RE: SORTA TRANSIT NUMBERS CERTIFICATION

As required by the District 2 Integrating Committee of the Ohio Public Works Commission, I that Ted Meyers of SORTA verbally gave me these transit numbers via telephone on September 18, 2008.

SORTA Average Daily Ridership:

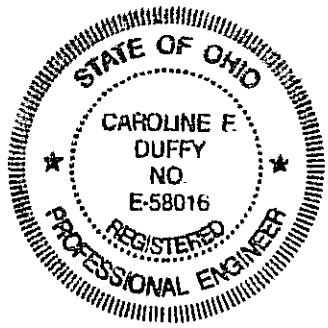
Routes 11 & 69:	2900 ADT
Route 28:	900 ADT
Total:	3800 ADT

USERS: 3800 ADT x 1.2= 4,560 Users

Respectfully,

Caroline F Duffy PE

Caroline F. Duffy, PE
Senior Traffic Engineer
Barr & Prevost



OHIO DEPARTMENT OF TRANSPORTATION

DISTRICT 8 • 505 SOUTH STATE ROUTE 741 • LEBANON, OHIO 45036-9518
513-932-3030 OR 1-800-831-2142 • FAX 513-932-9366

TRANSPORTATION PLANNING & PROGRAMS DEPARTMENT

September 16, 2008

Caroline Duffy
Senior Traffic Engineer
Barr & Prevost
9420 Towne Square Ave.
Cincinnati, Ohio 45242

Re: Pavement Projects on US 50

Dear Ms. Duffy:

The roadway surface of US 50, Wooster Pike, in the Villages of Fairfax and Mariemont was resurfaced in the summer of 2007 via an ODOT project, HAM-50-27.75, pid# 25297. The project started at western Fairfax corporation line to the eastern corporation line of Mariemont.

This project included work on the roadway surface and bridge decks. The roadway work included asphalt planing, pavement repair, and placement of a new asphalt surface course. The bridge work included bridge deck sealing, expansion joint maintenance, and drainage system clean-out. No work on existing curb and gutter or sidewalks was included in the plans.

If you need additional information, I am available at your convenience. Call me at (513) 933-6608 or e-mail me at jennifer.elston@dot.state.oh.us if you have any questions.

Respectfully,

Jennifer F. Elston, P.E.
ODOT District 8 Pavement Planning Engineer

c: file

BARR & PREVOST
ENGINEERING – TESTING

2853 FISCHER PLACE
CINCINNATI, OHIO 45211

January 15, 2008

Ms. Jennifer Kaminer
Village Administrator
Village of Fairfax
5903 Hawthorne Avenue
Fairfax, Ohio 45227

RE: Building Frontage Study

Dear Jenny,

We have utilized the CAGIS mapping of the Wooster Pike Corridor in the Village of Fairfax from the Southern Avenue/Dragon Way intersection with Wooster Pike to the Camden Avenue/Belmont Street intersection with Wooster Pike to determine if this area is a Central Business District as defined by the Ohio Revised Code. To make this determination, the Ohio Revised Code states that the frontage occupied between said intersections must be greater than 50% of the total length for both sides of the street. Each side is calculated separately to make this determination and both sides must meet these standards. In this calculation, the frontage occupied by the side streets is taken out of the calculation. If this corridor is determined to be a Central Business District, the Village will need a resolution declaring the corridor is a Central Business District, and then the speed limit in this corridor change be changed from the posted 35 mph to the legal speed limit of 25 mph.

Based on the information above, we have concluded that the corridor in question does fit the criteria of the Ohio Revised Code and should be declared a Central Business District.

The north side of the corridor has 53.62% occupied with building frontage.
The south side of the corridor has 62.46% occupied with building frontage.

The attachments to this letter are the backups of these findings. Bill Vorst, of ODOT District 8, has agreed with these findings.

Respectfully,

Caroline Duffy

Caroline F. Duffy, PE
Senior Traffic Engineer

TEL: (513) 476-6271 FAX: (513) 662-5017 cduffy@barreng.com

Building Frontage Study
Wooster Pike, Southern Avenue to Belmont Street
Village of Fairfax, Ohio
January, 2008

Between	Side of Street	Distance without Building (Ft.)	Distance with Building (Ft.)
Southern Avenue			
	North	40.08	55.73
	North	3.45	37.91
	North	3.13	118.51
	North	27.91	52.09
	North	32.61	
Germania Avenue			
	North	2.25	38.94
	North	81.96	64.11
	North	85.97	
Lonsdale Street			
	North	17.16	113.44
	North	65.36	44.51
	North	32.28	
Watterson Road			
	North	20.62	73.84
	North	107.62	26.67
	North	44.09	
Simpson Avenue			
	North	46.27	45.76
	North	48.28	92.13
	North	35.30	
Carlton Avenue			
	North	11.56	99.46
	North	23.52	66.79
	North	74.84	
Belmont Street			
		804.26	929.89

Between	Side of Street	Distance without Building (Ft.)	Distance with Building (Ft.)
Dragon Way			
	South	95.70	42.63
	South	4.80	161.63
	South	45.94	99.50
	South	86.40	
Spring Street			
	South	81.40	44.73
	South	6.22	69.46
	South	48.77	107.90
	South	71.09	77.13
	South	3.17	42.92
	South	18.26	
Arrow Point Way			
	South	22.19	70.42
	South	39.00	43.52
	South	30.61	208.75
	South	83.90	25.69
	South	2.86	61.12
	South	3.19	15.28
Corporation Limit			
		643.50	1070.68

	North		South	
Sum of street with building:	929.89	53.62%	1070.68	62.46%
Sum of street without building:	804.26	46.38%	643.50	37.54%
Total	1734.15		1714.18	

EXHIBIT A

Ohio Department of Transportation

WARRANTS FOR SPEED ZONES

NAME:	Village of Farifax					DATE:	2/5/2008
COUNTY	Hamilton			ROUTE/STREET:	US-50 Inside Fairfax		
BEGIN:	29.71	END:	29.85	LENGTH:	0.14	ADT:	19780

(End Length minus Begin Length)

I. HIGHWAY DEVELOPMENT

(A) BUILDING DEVELOPMENT

(B) INTERSECTION CLASSIFICATION

TYPE 1 -	UNITS	0	X 1 =	0	CLASS A -	NO.	1	X 2 = 2
TYPE 2 -	UNITS	0	X 2 =	0	CLASS B -	NO.	1	X 3 = 3
TYPE 3 -	UNITS	0	X 3 =	0	CLASS C -	NO.		X 4 = 0
TYPE 4 -	UNITS	0	X 4 =	0				
			TOTAL TYPE (A)	0				TOTAL CLASS (B) 5

HIGHWAY DEVELOPMENT = (A) 0 + (B) 5 = 35.7142857

0.14

II. ROADWAY FEATURES

FACTORS	8	9	10	11	12	
1) LANE WIDTH, FEET	<9	9	10	11	>=12	11
2) SHOULDER . . . .Unimproved	<2	<4	<6	>=6		
Improved		<2	<4	<6	>=6	10
3) CHARACTERISTICS	E	D	C	B	A	12

TOTAL ROADWAY FEATURES = 33

V. ACCIDENT CALCULATION: 2740 X 24 ACC. = ACC. 7.915644

19780 ADT X 3 YR. X 0.14 MILES = MIL. VEH. MILES

SPEED LIMIT FACTOR:	45	55	64	73	82	91	100	
I. HIGHWAY DEVELOPMENT	>80	69-80	57-68	45-56	33-44	21-32	<21	82
II. ROADWAY FEATURES	24	25-26	27-28	29-30	31-32	33-34	35-36	91
III. 85 PERCENTILE (MPH)	23-27	28-32	33-37	38-42	43-47	48-52	>52	73
IV. PACE (MPH)	13-27	18-32	23-37	28-42	33-47	38-52	43-57	73
V. ACCIDENTS/MVM	>5.0	4.4-5.0	3.7-4.3	3.0-3.6	2.3-2.9	1.6-2.2	<1.5	45

TOTAL FACTORS = 364

CALCULATED SPEED : TOTAL FACTORS 364 X 55 =

5 X 100

40.04 MPH

VI. TEST RUN, AVERAGE _____ MPH

WARRANTED SPEED = MPH

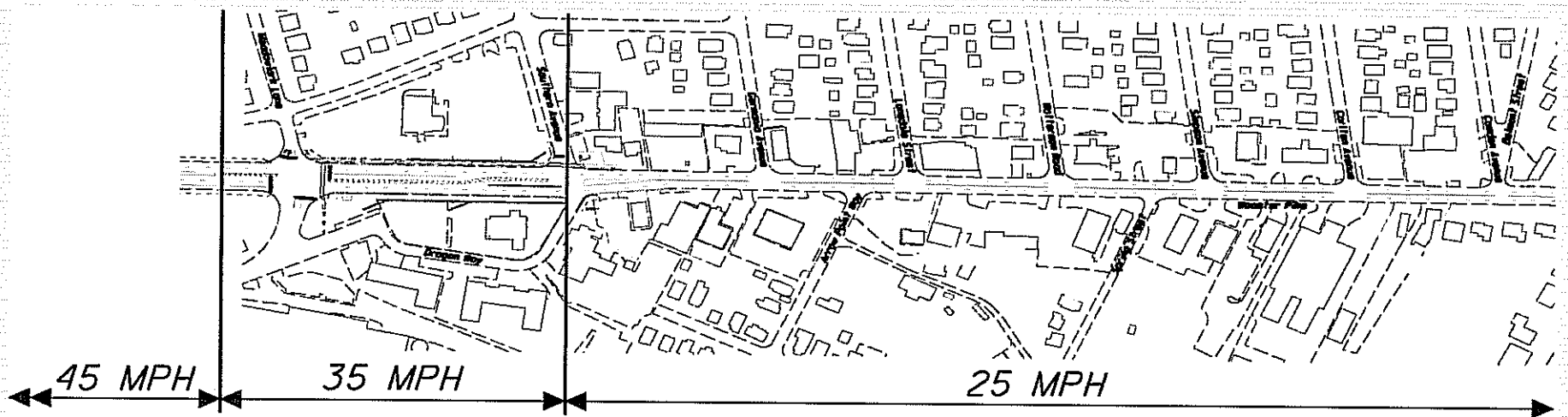
Study by:

Requested Speed Limit 35

Additional Information and comments:

Wooster Pike Traffic Study

Speed Limit



March 20, 2008

VILLAGE OF FAIRFAX

"Working Together To Build A Better Community"

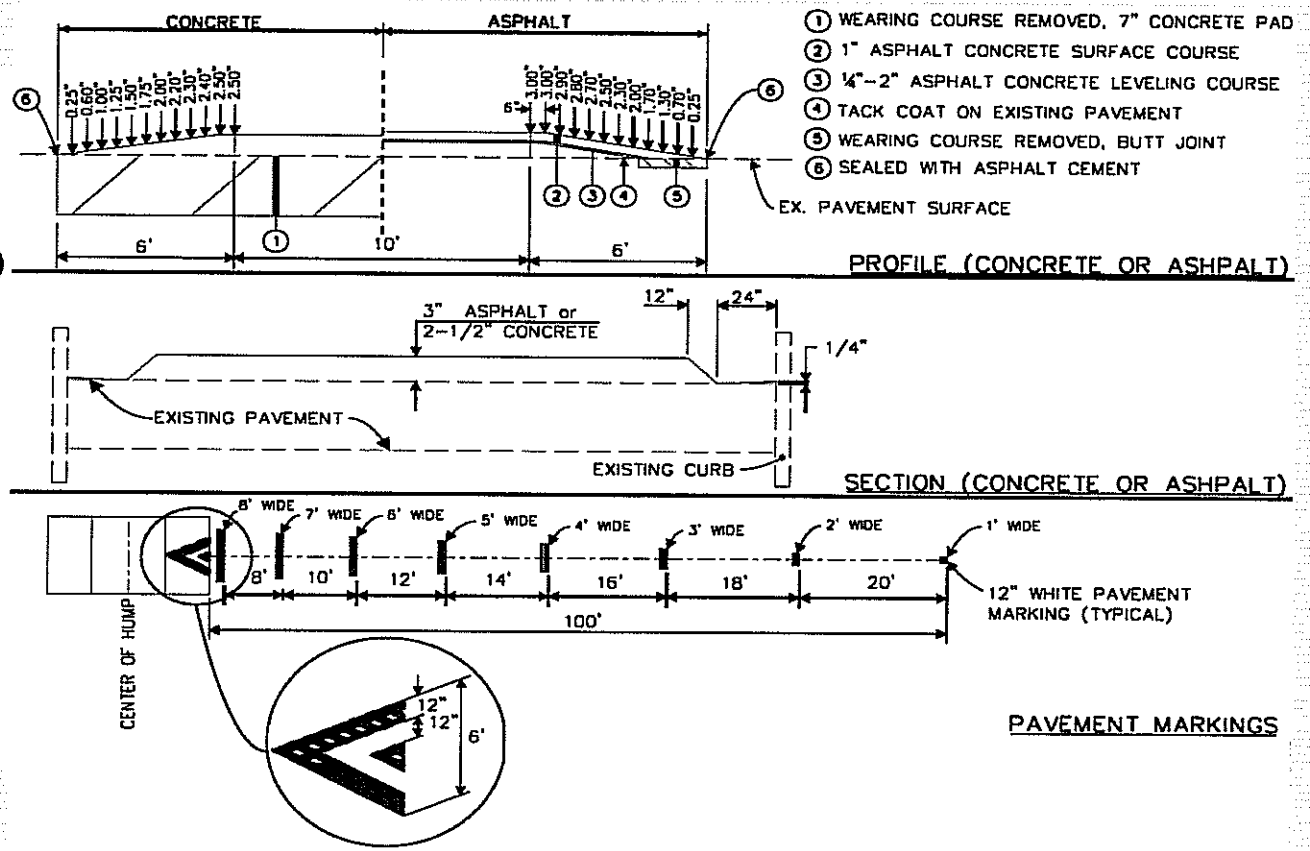
Barr & Prevost

engineering – testing

Wooster Pike Traffic Study

Speed Humps

W17-1
Sec. 2C.24



March 20, 2008

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Wooster Pike Traffic Study

Traffic Patterns

March 20, 2008

VILLAGE OF FAIRFAX

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Wooster Pike Study
Village Fairfax, Ohio

Accidents per Million Vehicle Miles
Along Wooster Pike
From Meadowlark/Wooster Pike east the Mariemont Corporation Line

CRASHES FOR YEAR 2004, 2005 and 2006

Year	# Crashes
2004	33
2005	31
2006	12
TOTAL	**76**

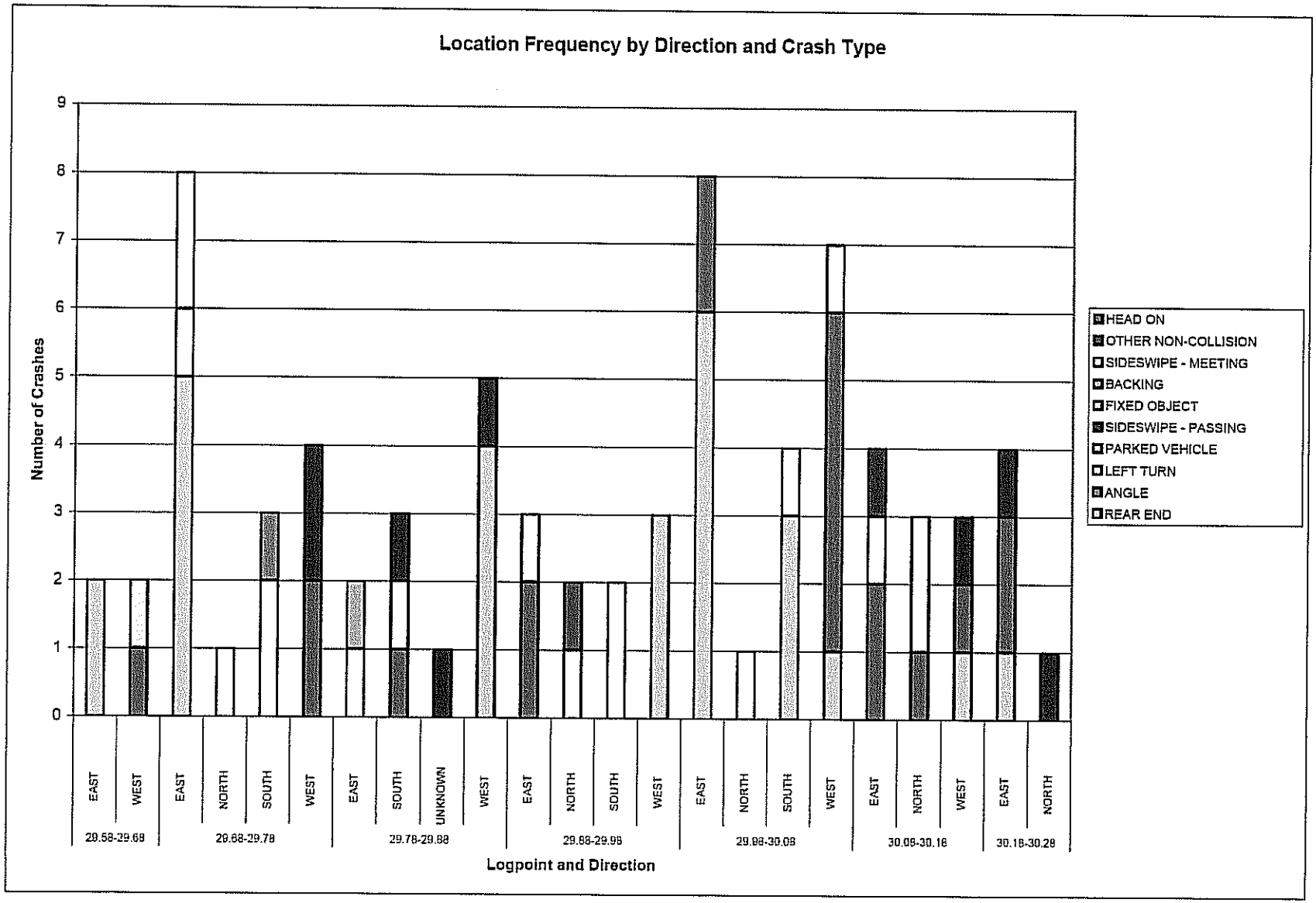
Number of crashes for 3 Years: 76
Exposure 365 days x 3 years: 1,095 days
ADT: 21,750
Project Length: 0.56 miles

Accidents per million vehicle miles:

$$= \frac{(76 \text{ crashes}) \times (1{,}000{,}000)}{(1{,}095 \text{ days}) \times (0.56 \text{ miles}) \times (21{,}750 \text{ ADT})}$$

$$= \frac{76{,}000{,}000}{13{,}337{,}100}$$

= 5.70 Accidents per millions vehicle miles


Location Frequency by Direction and Crash Type
Number of Crashes
0
1
2
3
4
5
6
7
8
9
EAST
WEST
EAST
NORTH
SOUTH
WEST
EAST
SOUTH
UNKNOWN
WEST
EAST
NORTH
SOUTH
WEST
EAST
NORTH
SOUTH
WEST
EAST
NORTH
WEST
EAST
NORTH
29.58-29.68
29.68-29.78
29.78-29.88
29.88-29.98
29.98-30.08
30.08-30.18
30.18-30.28
Logpoint and Direction
HEAD ON
OTHER NON-COLLISION
SIDESWIPE - MEETING
BACKING
FIXED OBJECT
SIDESWIPE - PASSING
PARKED VEHICLE
LEFT TURN
ANGLE
REAR END

ORDINANCE NO. 15-1998

LEVYING A MUNICIPAL MOTOR VEHICLE LICENSE FEE PURSUANT TO SECTION 4504.172 OF THE OHIO REVISED CODE

BE IT ORDAINED by the Council of the Village of Fairfax, State of Ohio that:

SECTION I: Pursuant to Section 4504.172 of the Ohio Revised Code, there is hereby levied an annual license tax upon the operation of motor vehicles on the public roads or highways for the purpose of paying the costs and expenses of enforcing and administering the tax provided for in this section; to provide additional revenue for the purposes set forth in Section 4504.06 of the Ohio Revised Code; and to supplement revenue already available for such purposes.

SECTION II: The tax provided herein shall be at the rate of Five Dollars ($5.00) per motor vehicle on each and every motor vehicle the district of registration of which, as defined in Section 4503.10 of the Ohio Revised Code, is in the Village of Fairfax, Ohio.

SECTION III: As used in this Ordinance, the term "motor vehicle" means any and all vehicles included within the definition of motor vehicle in Sections 4501.01 and 4505.01 of the Ohio Revised Code, as those sections may be amended from time-to-time.

SECTION IV: The tax imposed by this Ordinance shall apply to and be in effect for the registration year commencing January 1, 2000 and shall continue in effect and application during each registration year thereafter.

SECTION V: The tax imposed by this Ordinance shall be paid to the Registrar of Motor Vehicles of the State of Ohio or to the Deputy Registrar at the time application for registration of a motor vehicle is made.

SECTION VI: All money derived from the tax levied herein shall be used by the Village of Fairfax for the purposes specified in this Ordinance.

SECTION VII: This Ordinance shall take effect from and after the earliest period allowed by law.

Passed this 16th day of September, 1998.

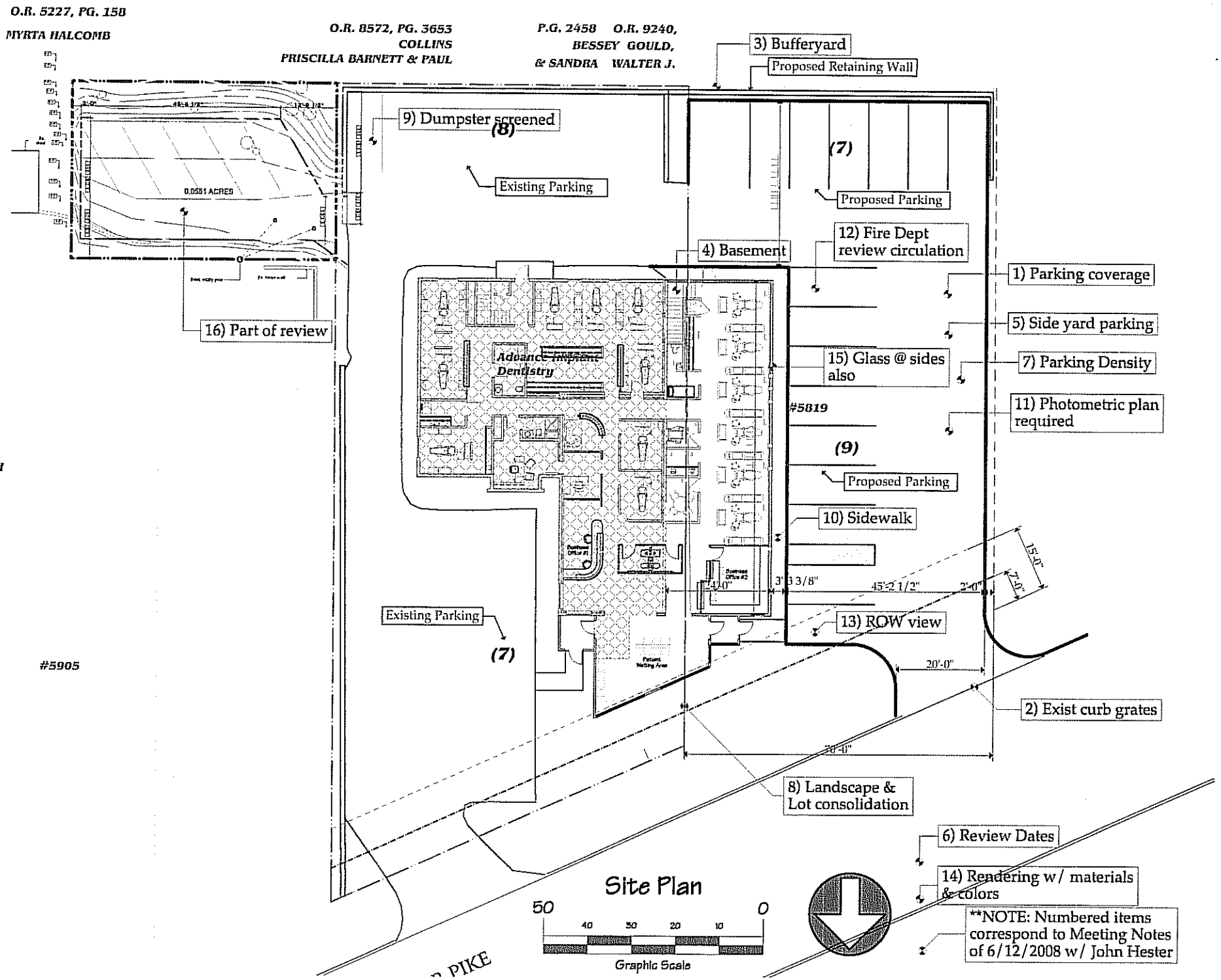
Mayor

ATTEST:

Rebecca Stephens
Clerk-Treasurer
Acting

CERTIFICATE

I hereby certify this to be a true and correct copy of Ordinance No. 15-1998 passed at a meeting of the Council of the Village of Fairfax on this 16th day of September, 1998.


O.R. 5227, PG. 158
MYRTA HALCOMB
O.R. 8572, PG. 3653
COLLINS
PRISCILLA BARNETT & PAUL
P.G. 2458 O.R. 9240,
BESSEY GOULD,
& SANDRA WALTER J.
3) Bufferyard
Proposed Retaining Wall
9) Dumpster screened
(8)
(7)
Existing Parking
Proposed Parking
12) Fire Dept review circulation
4) Basement
1) Parking coverage
16) Part of review
Advance Implant Dentistry
5) Side yard parking
15) Glass @ sides also
7) Parking Density
#5819
11) Photometric plan required
(9)
Proposed Parking
10) Sidewalk
15'-0"
7'-0"
3'-0"
3 3/8"
45'-2 1/2"
2'-0"
Existing Parking
(7)
13) ROW view
20'-0"
#5905
2) Exist curb grates
70'-0"
8) Landscape & Lot consolidation
6) Review Dates
14) Rendering w/ materials & colors
**NOTE: Numbered items correspond to Meeting Notes of 6/12/2008 w/ John Hester
Site Plan
50
40
30
20
10
0
Graphic Scale
PIKE

Wooster Pike Traffic Study

ODOT Tube Counts

2005 HAMILTON CO 6
AVERAGE 24-HR TRAFFIC VOLUME

	SECT. BEGINS	TRAFFIC SECTION	SECT. LENGTH	PASS & A COM'L	B & C COM'L	TOTAL VEH.
U	29.00	LEAVE CINCINNATI / S. CORP. FAIRFAX	.17	14020	290	14310
U	29.17	RED BANK RD.	.68	19330	450	19780
U	29.85	SOUTHERN AVE.	.37	20810	940	21750
U	30.22	LEAVE FAIRFAX / W. CORP. MARIEMONT	1.03	20810	940	21750

March 20, 2008

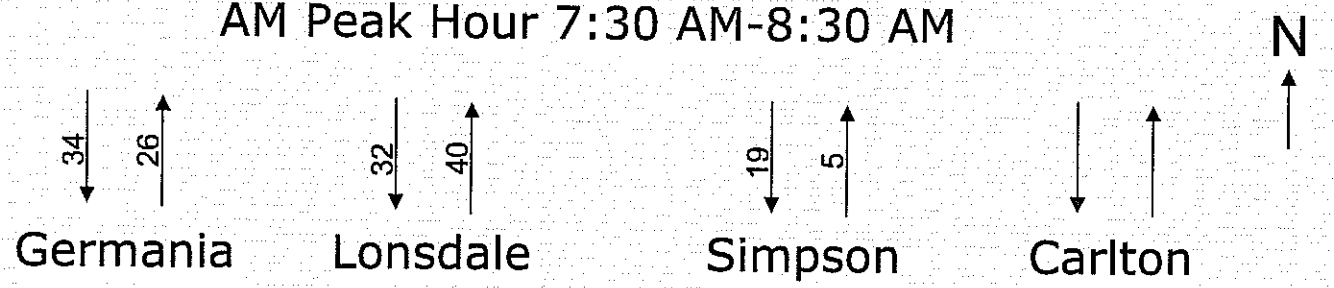
VILLAGE OF FAIRFAX
"Working Together To Build A Better Community"

Barr & Prevost
engineering – testing

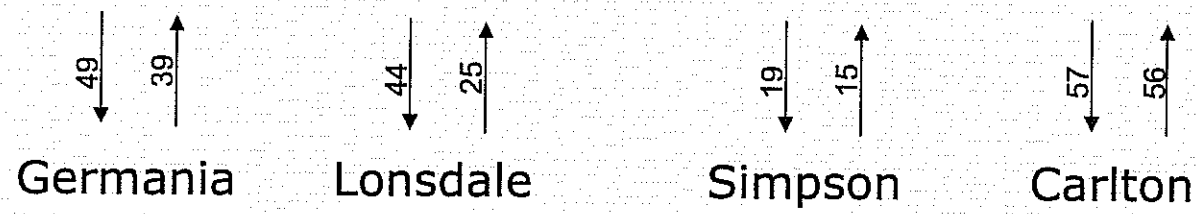
Wooster Pike Traffic Study

Existing Tube Volumes

AM Peak Hour 7:30 AM-8:30 AM



PM Peak Hour 4:45 PM-5:45 PM



March 20, 2008

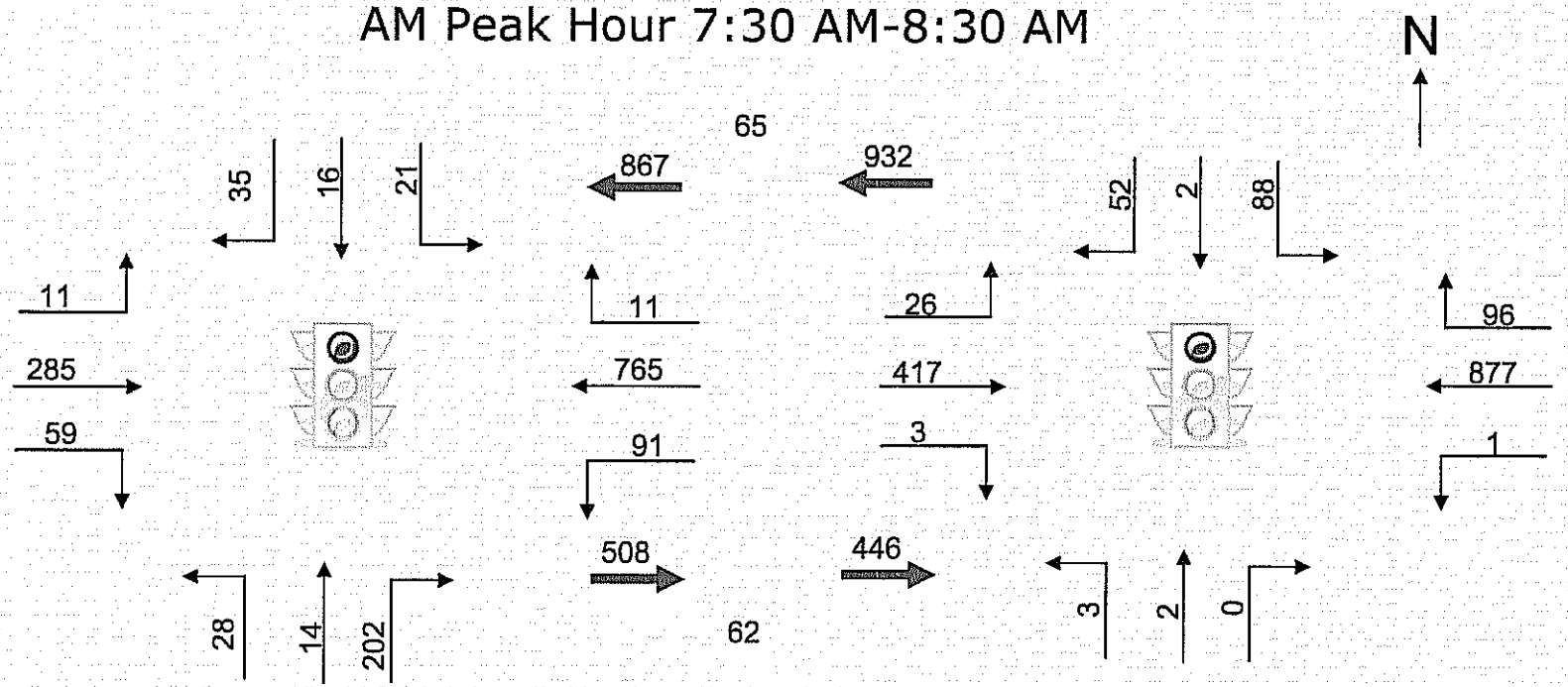
"Working Together To Build A Better Community"

Barr & Prevost
engineering – testing

Wooster Pike Traffic Study

Existing Turning Movement Counts

AM Peak Hour 7:30 AM-8:30 AM



March 20, 2008

"Working Together To Build A Better Community"

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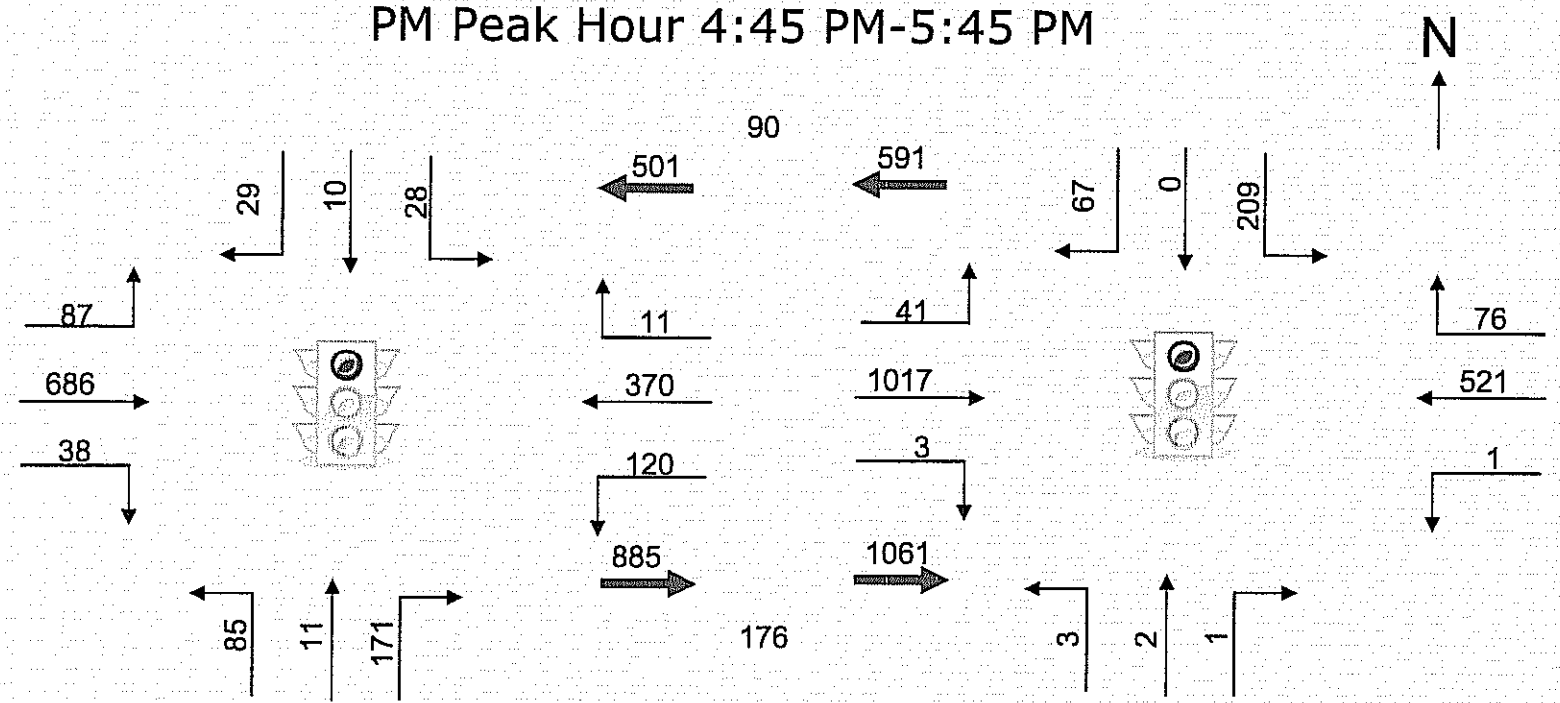
Wooster Pike Traffic Study

Existing Turning Movement Counts

PM Peak Hour 4:45 PM-5:45 PM



Wooster and Meadowlark

Wooster and Watterson

March 20, 2008

"Working Together To Build A Better Community"

Barr & Prevost

engineering – testing

Ohio Public Works Commission
Capital Improvement Report
Summary Form

Village of Fairfax	061-25942	Hamilton	9/12/2008
Subdivision	Code	County	Date

Infrastructure Component	Replacement Cost	Repair Cost	Total Units	Units/Physical Condition					
				Excellent	Good	Fair	Poor	Critical	Unknown
Roads	$2,000,000	$800,000	Center Line Miles 20			x			
Bridges	$2,000,000	$800,000	Number of Bridges 6			X			
Culverts	$1,000,000	$200,000	Number of Culverts 2		x				
Water Supply Systems	N/A (CWW)		Number of Facilities 0						
Water Distribution	N/A		Linear Feet (Thousands) 0						
Wastewater Systems	N/A (MSD)		Number of Facilities 0						
Wastewater Collection	N/A		Linear Feet (Thousands) 0						
Stormwater Collection	$900,000	$200,000	Linear Feet (Thousands) Not known			X			
Solid Waste Disposal	$105,000 (contract)		Capacity (Tons per Day) ?						
Totals	$5,900,000	$2,000,000							

Subdivision Socio-Economic Characteristics

Current		1990 Census Information			
Population	1,038	Population	1,038	% LMI	
Total Households	817	Total Households	832	% Poverty	2.0%
% Unemployment	2.9%	MHI		% Unemploy	3.0%

Ohio Public Works Commission
Five Year Capital Improvement Plan/Maintenance of Effort
REQUIRED
Submit to Commission/Update Annually

Village of Fairfax
Subdivision

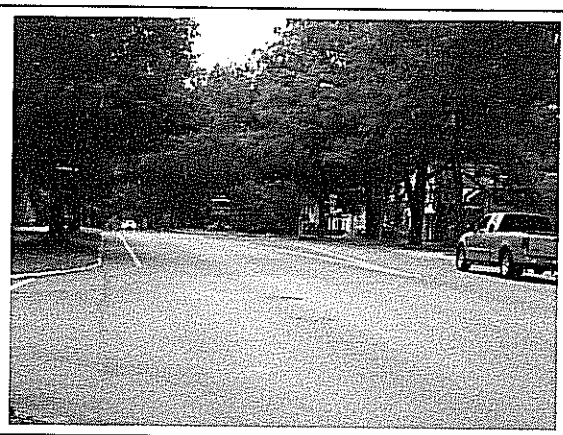
061-25942
Code

9/12/2008
Date

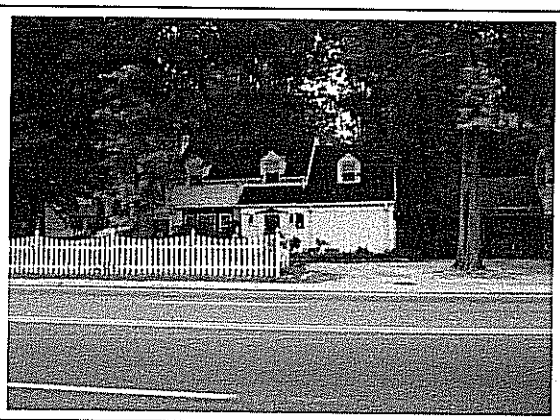
Project Name/Description	Funding Codes(s)	Status (A) Active (P) Pending (C) Complete	Total Cost	Two Year Effort		Five Year Plan				
				2007	2008	2009	2010	2011	2012	2013
				Funded		*Planned*				
Police Cruiser Leases		A	$130,000	$18,000	$18,000	$18,000	$18,000	$18,000	$20,000	$20,000
New Watterson Road-Engineering		A	$150,000	$0	$0	$150,000	$0	$0	$0	$0
Plane Residential Streets-Ph. 1,2,3 & 4		A	$2,500,000	$0	$500,000	$500,000	$500,000	$500,000	$500,000	$0
Red Bank Road Engineering-Widening Ph. 2		C	$150,000	$0	$150,000	$0	$0	$0	$0	$0
Red Bank Road Widening Phase 2-Construction		C	$4,200,000	$2,400,000	$1,800,000	$0	$0	$0	$0	$0
Maintenance Dump Truck		A	$ 60,000.00	$0	$0	$60,000	$0	$0	$0	$0
Wooster Pike Revitalization Plan		A	$ 2,407,182.00	$0	$0	$0	$2,407,182	$0	$0	$0

Blank Forms Available At
www.pwc.state.oh.us

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

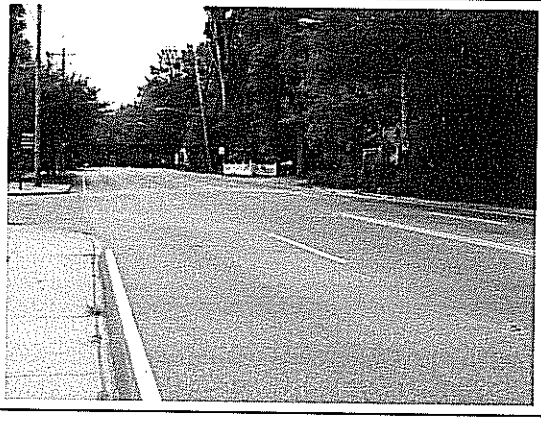


On Wooster Pike, at the Mariemont Corporation Line, looking East. Road section transitions to existing one lane in each direction with a median in Mariemont.



On Wooster Pike, at Mariemont Corporation Line, looking South. Residential land use on US 50/Wooster Pike.

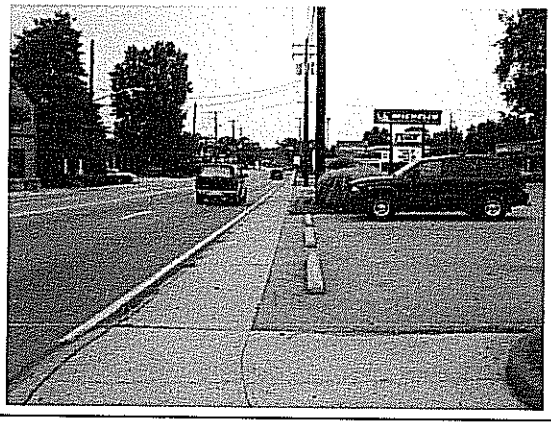
On Wooster Pike, at Mariemont Corporation Line, looking West. Large curb cut. Curb not proper height. Sidewalk substandard width.



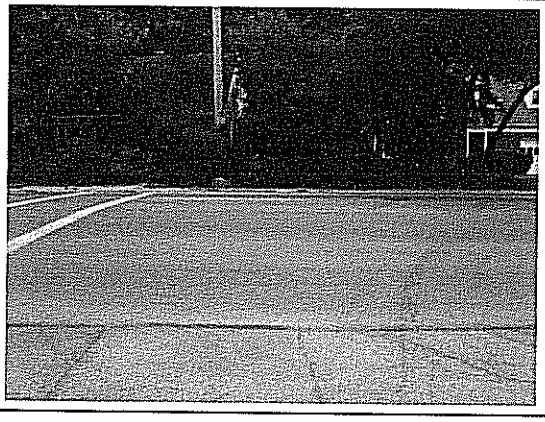
On Wooster Pike, west of Camden, looking East. Curb is not proper height. Sidewalk is substandard width..

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

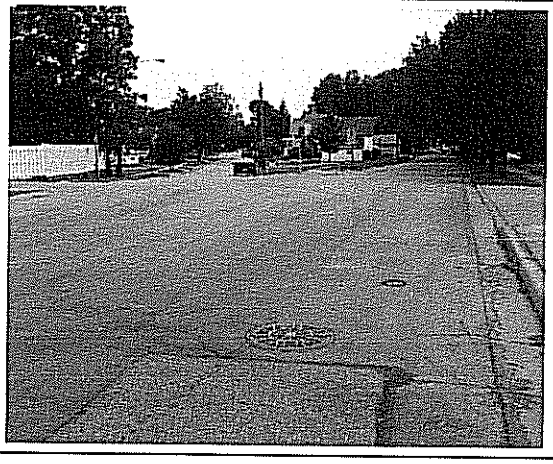
On Wooster Pike at Camden/Belmont intersection, looking west. Large existing curb cut blocked off by parking blocks by owner.



On Wooster Pike, west of Camden, looking West. Large existing curb cut blocked off by parking blocks by owner. Curb is not proper height. Sidewalk is substandard width.

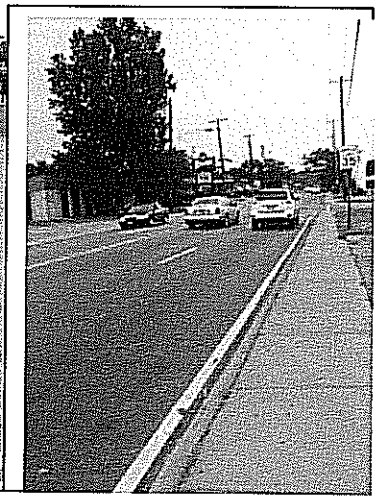


On Wooster Pike, west of Camden, looking South at existing crosswalk at unsiganlized intersection.

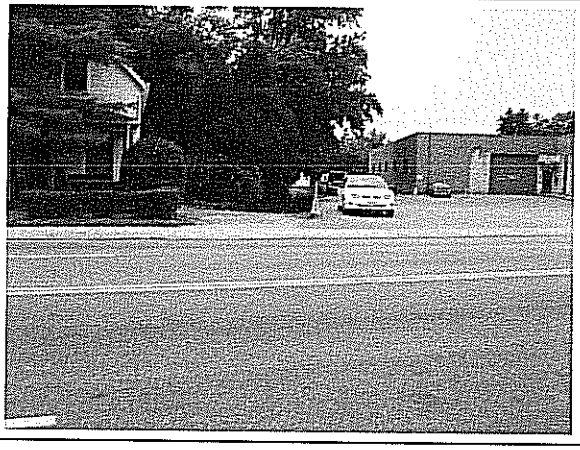


On Wooster Pike, looking North at the Camden Avenue/Belmont Avenue intersection. The Wooster Pike Project will eliminate the extra pavement and construction a cul-de-sac for Camden Avenue(left). A speed hump will be constructed on Belmont Avenue(right)

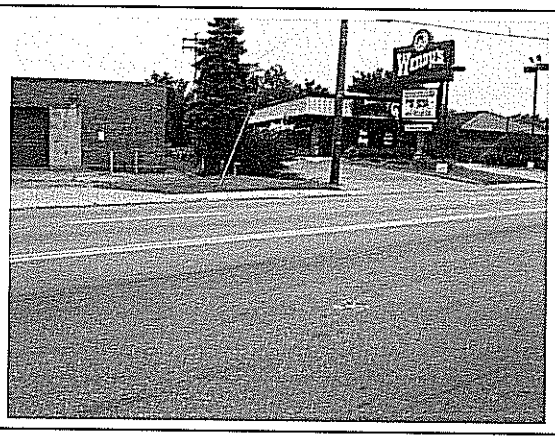
US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.



On Wooster Pike, Between Camden Avenue and Carlton Avenue, looking east. Curb needs reconstruction and sidewalk needs to be brought up to ADA requirements and moved away from the edge of edge of travel pavement.



On Wooster Pike, looking south at a residential home and the former Cincinnati Bell Telephone building. Notice the large curb cut.



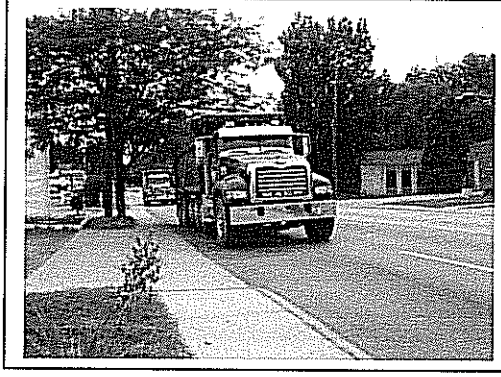
On Wooster Pike, looking South at former Cincinnati Bell Building and Wendy's driveway. Notice large curb cuts.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

On Wooster Pike, between Camden Avenue and Carlton Avenue, looking East.

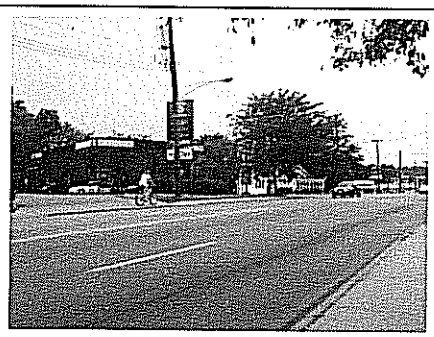
On Wooster Pike, west of Carlton Avenue, looking East. Notice the numerous curb cuts.

On Wooster Pike, at Simpson Avenue, looking West at numerous large trucks next to sidewalk.

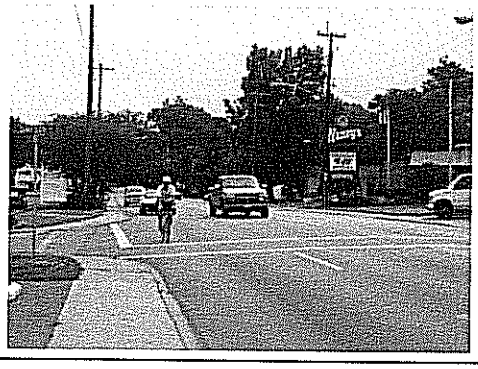


On Wooster Pike, looking East. Notice interference of trees with large trucks

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.



On Wooster Pike, looking West. Notice bicyclist riding on the 4' wide sidewalk.



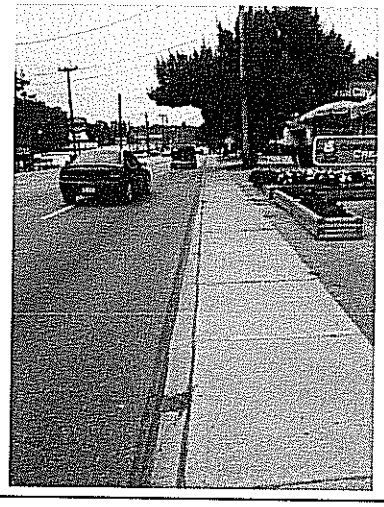
On Wooster Pike, looking East. Notice multi-modal nature of roadway, i.e.bicyclist. SORTA has several routes that make stops along this corridor as well.

On Wooster Pike, looking East. Notice pedestrians on substandard width sidewalk.

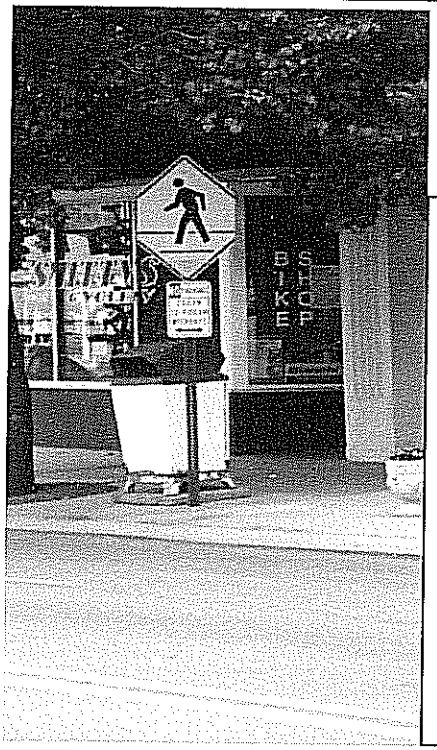
On Wooster Pike, looking at the antiquated signals at the Watterson Road intersection.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

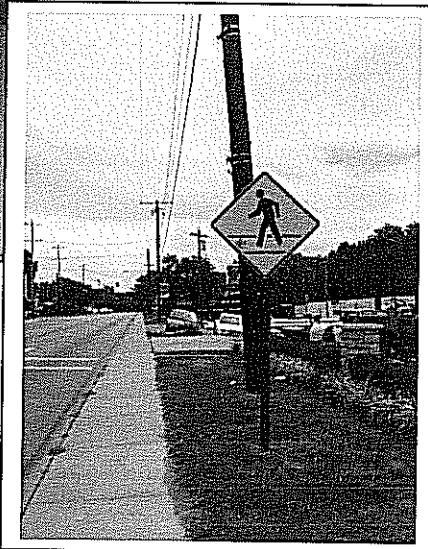
Sign for westbound Wooster Pike at parking zone. Conflicting messages on signs. Signs not posted at legal height.



On Wooster Pike, at Simpson Avenue, looking west. Notice business owner has taken closing off his driveways on Wooster Pike with flower boxes.

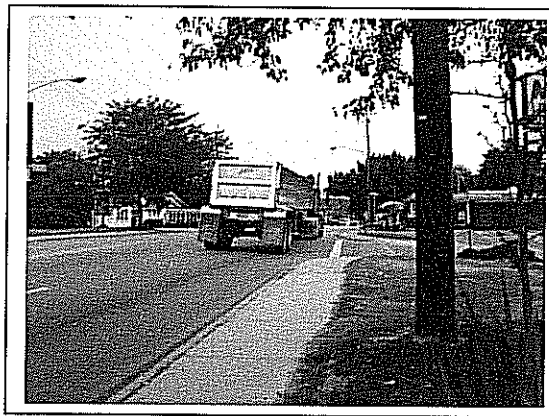


On Watterson Avenue, westbound. Notice the sign corners are clipped as the sign is close to the heavy vehicles on



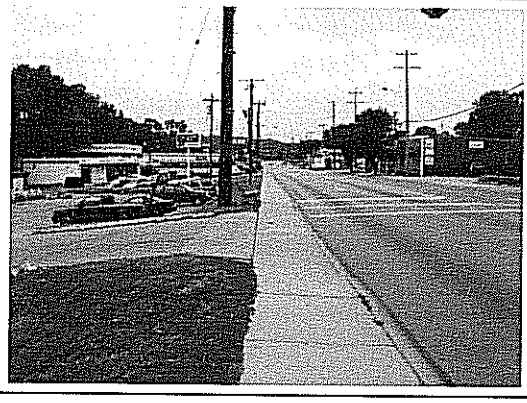
On Wooster Pike, looking west. Outdated cross walk sign needs to be replaced and relocated to proper location by crosswalk.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

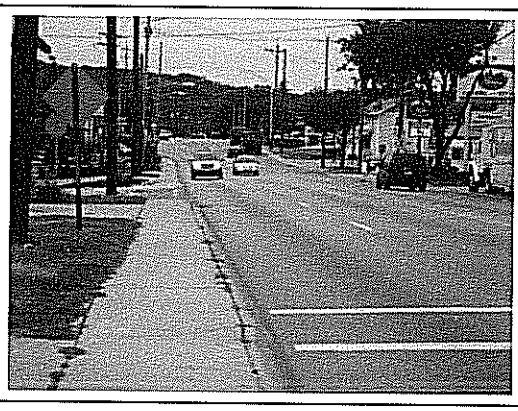


On Wooster Pike, looking west. More large trucks next to sidewalk.

On Wooster Pike, looking south at Arrow Point Drive. Notice the large curb cut to the left.

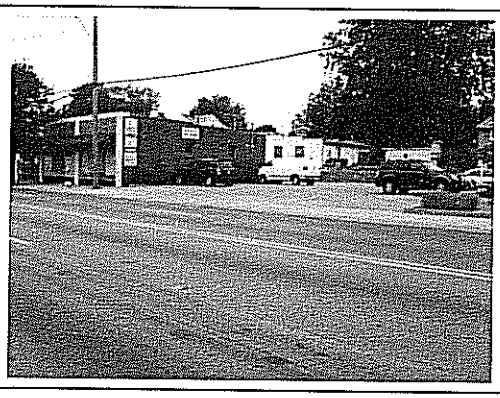


On Wooster Pike, on south side of street, looking west. Notice large drop off next o sidewalk.



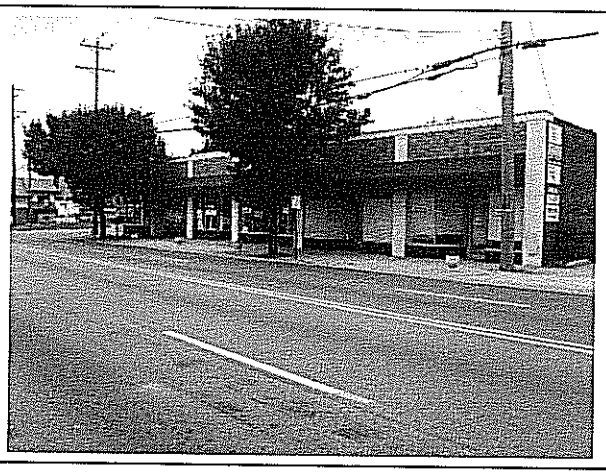
On south side of Wooster Pike, looking east.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

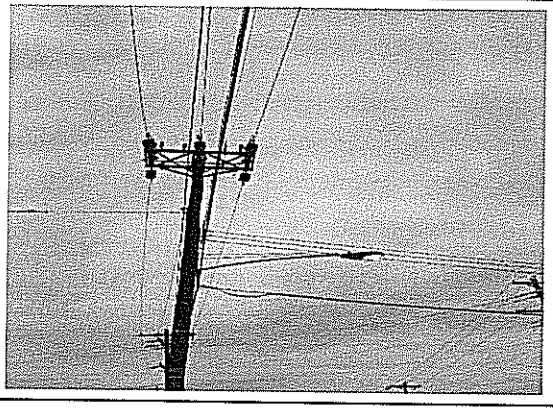


On Wooster Pike, looking west at parking lot. This lot replaced a building to make way for sorely needed parking in the business district.

On Wooster Pike, looking North at the intersection of Watterson. Notice the business has a curb cut the entire length of the frontage on Wooster Pike and on Watterson Avenue.

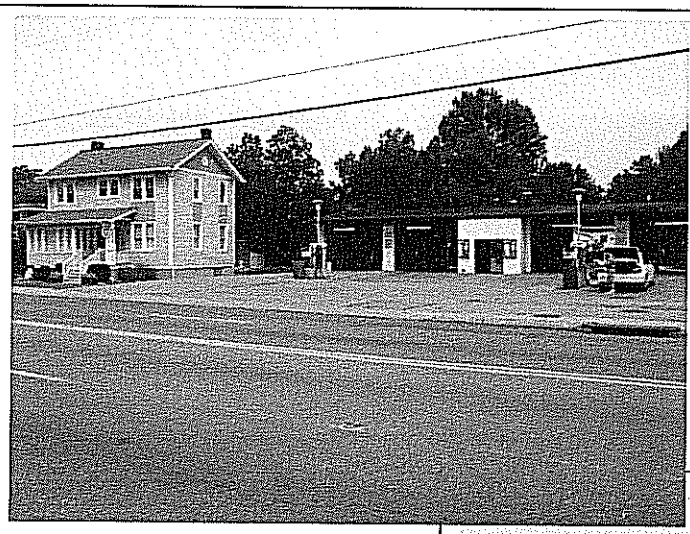


On Wooster Pike, looking north at northeast corner of Wooster Pike and Lonsdale Avenue. This building currently has on street parking that is proposed to be removed. Trees are missing branches that are sticking out into the pavement area, forming a truck shape in the tree silhouette.

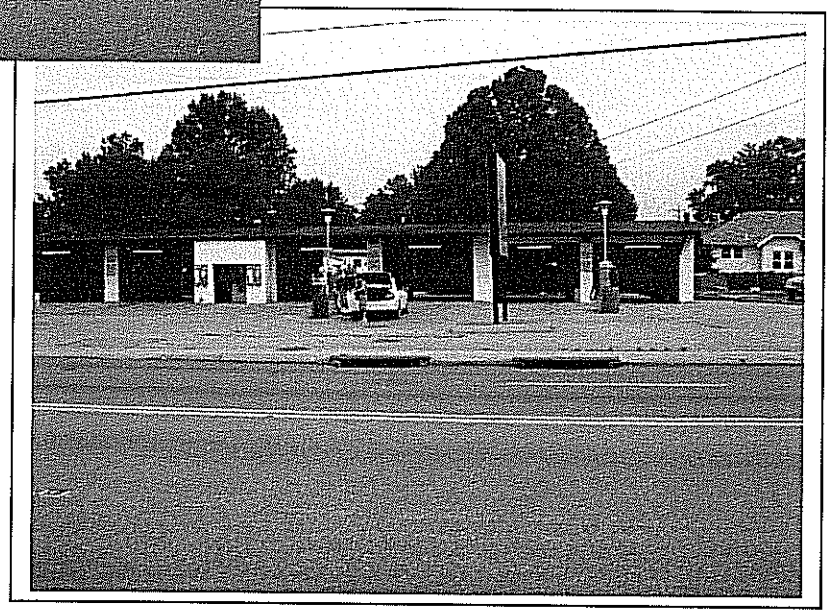


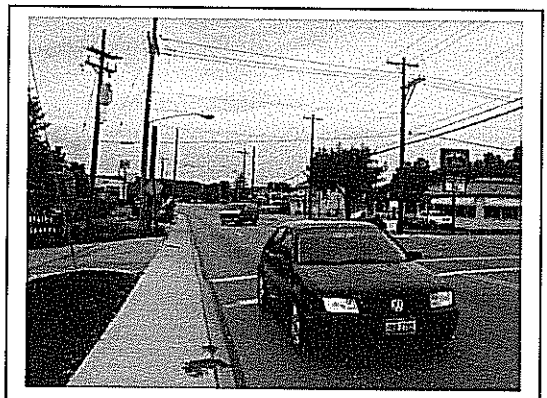
Utility pole line on Wooster Pike.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.



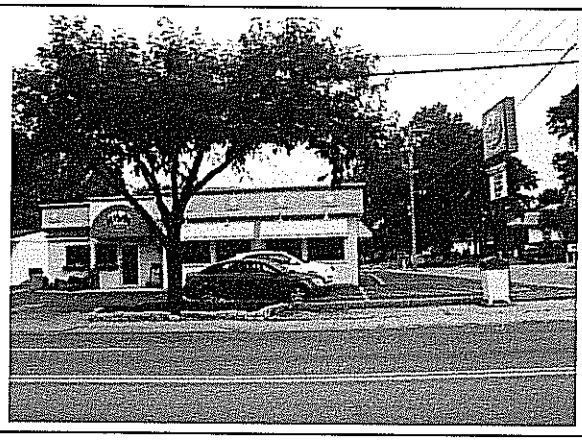
On south side of Wooster Pike, looking north at self serve car wash. Notice curb cut that extends the entire length of the frontage on Wooster Pike.



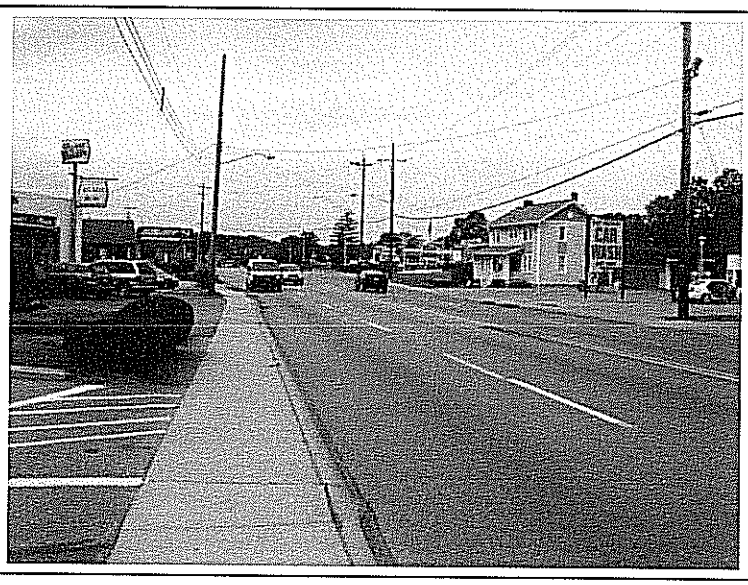


On Wooster Pike, looking West. Notice numerous curb cuts.

US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.

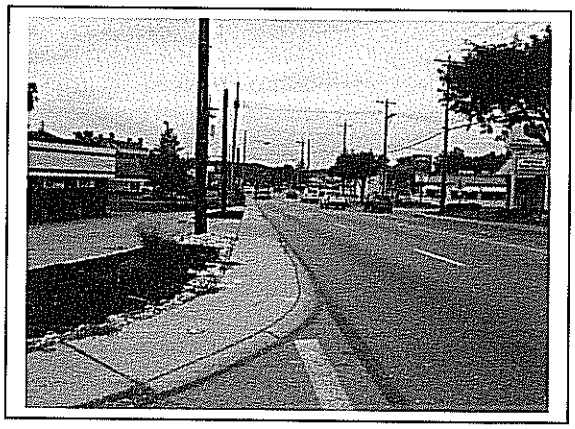


On south side of Wooster Pike, looking north at northwest corner of intersection with Germania Avenue. Notice large curb cuts on Wooster Pike frontage and one large curb cut on Germania Avenue.

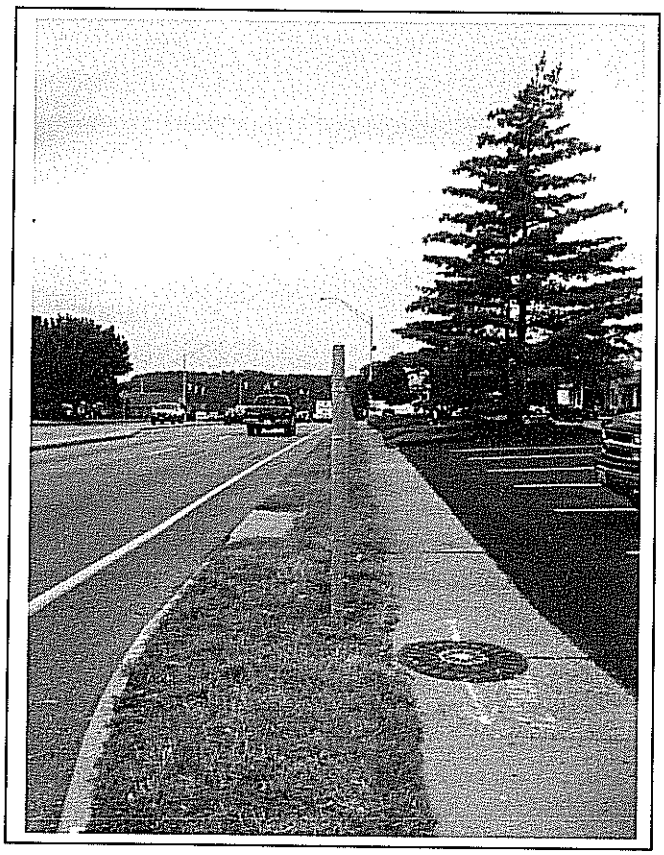


On south side of Wooster Pike, looking west.

On Wooster Pike, looking east. Notice large trucks next to the sidewalk and the large curb cuts.

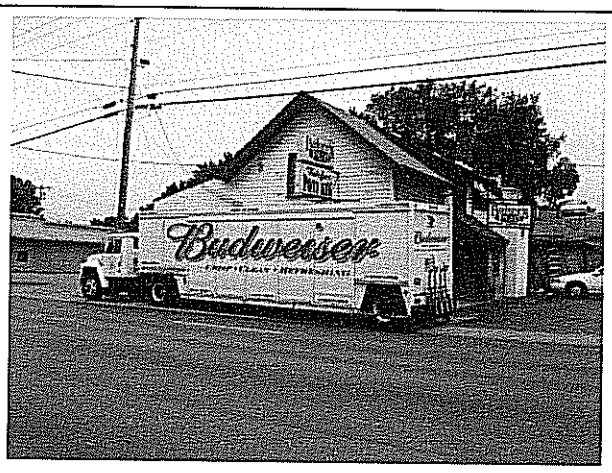


US 50- Wooster Pike Project. Village of Fairfax, Ohio. Pictures taken August, 2008.



On Wooster Pike at Southern Avenue, looking west along the frontage for Frish's Restaurant. Sidewalks and ramps do not meet ADA requirements.

On Wooster Pike, looking north at the intersection of Lonsdale Avenue. Notice narrow sidewalks.



On south side of Wooster Pike, looking north. Notice trucks parked on sidewalk while loading and unloading.

On south side of Wooster Pike, looking west.

ADDITIONAL SUPPORT INFORMATION

For Program Year 2009 (July 1, 2009 through June 30, 2010), applying agencies shall provide the following support information to help determine which projects will be funded. Information on this form must be accurate, and where called for, based on sound engineering principles. Documentation to substantiate the individual items, as noted, is required. The applicant should also use the rating system and its' addendum as a guide. The examples listed in this addendum are not a complete list, but only a small sampling of situations that may be relevant to a given project.

IF YOU ARE APPLYING FOR A GRANT, WILL YOU BE WILLING TO ACCEPT A LOAN IF ASKED BY THE DISTRICT? _____YES __x__NO (ANSWER REQUIRED)
Note: Answering "Yes" will not increase your score and answering "NO" will not decrease your score.

1) What is the physical condition of the existing infrastructure that is to be replaced or repaired?
Give a statement of the nature of the deficient conditions of the present facility exclusive of capacity, serviceability, health and/or safety issues. If known, give the approximate age of the infrastructure to be replaced, repaired, or expanded. Use documentation (if possible) to support your statement. Documentation may include (but is not limited to): ODOT BR86 reports, pavement management condition reports, televised underground system reports, age inventory reports, maintenance records, etc., and will only be considered if included in the original application.

The State of Ohio resurfaced the Wooster Pike Corridor in the summer of 2007. However, this construction project did not include any improvements from the curbs outside to the existing right-of-way line. This project will make the necessary improvements will make the necessary safety upgrades from the curb line to the existing right-of-way line. The roadway will receive a micro-surface overlay on Wooster Pike. The cul-de-sacs at the stub streets will receive a full depth pavement as will the Spring Street Access Road.

2) How important is the project to the safety of the Public and the citizens of the District and/or service area?
Give a statement of the projects effect on the safety of the service area. The design of the project is intended to reduce existing accident rate, promote safer conditions, and reduce the danger of risk, liability or injury. (Typical examples may include the effects of the completed project on accident rates, emergency response time, fire protection, and highway capacity.) Please be specific and provide documentation if necessary to substantiate the data. The applicant must demonstrate the type of problems that exist, the frequency and severity of the problems and the method of correction.

There are many curb cuts along the Wooster Pike Corridor. This corridor has been designated as a Central Business District and legislatively its speed limit is 25 mph, although the posted speed limit is currently 35 mph. Speed coupled with excessive curb cuts has led to numerous accidents. Data obtained from the Ohio Department of Transportation and verified by the Village of Fairfax Police Department has yielded a rate of 5.70 accidents per million vehicle mile. The majority of the accidents along this corridor (93.3%) are broken out into the following categories: Rear End 34.2%; Angle: 25%; Left Turn 11.8%; Parked Vehicle 11.8%; and Sideswipe 10.5%. The rear end accidents will be reduced with wider lanes and a center 2-way left turn lane, better signal timing and traffic calming to reduce speed. Angle accidents will be reduced by upgrading the existing signals. Left turn accidents will be reduced by wider lanes and a center 2 way left turn lane, better signal timing and reducing the number of opposing lanes to cross. Parked Vehicle accidents will be reduced by having designated loading/unloading areas, as well as a transit layover area, for busses and vehicles unloading/loading at businesses along the corridor, instead of current practice of loading/unloading in a travel lane. Sideswipe accidents will be reduced with wider lanes and a center 2 way left-turn lane and better signal timing. The overall accident rate will drop because of

the reduced speed provided by the traffic calming provided by the road diet. Currently, the typical section has the 4' wide sidewalk directly behind the barrier curb. There is a 940 (4%) Truck ADT on Wooster Pike. These trucks are concentrated during the 7AM to 6PM time period. It is unsafe to be walking on a narrow sidewalk at the same time having three trucks speeding next to the sidewalk, only separated by a 6" curb. The proposed typical section will provide a 2' gutter plate, a 6" curb and a 3.5' tree lawn between the edge of pavement that the trucks will be traveling in and the edge of the sidewalk that the pedestrian will be walking along. This 6' buffer will provide a safer roadway. In addition, several bicyclist have been observed riding Wooster Pike. Having a wider lane will assist the bicyclist. Currently because of poor signal installation and coordination, many vehicles turn from Wooster Pike, a minor arterial, onto the residential streets of Meadowlark Avenue, Grace Avenue, Southern Avenue, Germania Avenue, Lonsdale Avenue, Watterson Road, Simpson Road, Camden Avenue, Carlton Avenue and Belmont Avenue on a path that leads to Erie Avenue and I-71. These local roadway facilities were not made to handle this traffic. In an effort to protect the residential neighborhood streets, five cul-de-sacs are proposed at Germania Avenue, Lonsdale Avenue, Simpson Road, Camden Avenue, Carlton Avenue. As a disincentive, numerous speed humps will be placed on Grace Avenue, Southern Avenue, Watterson Road and Belmont Avenue. Further Traffic Calming will be achieved on Watterson Avenue with a roundabout at the intersection of Watterson Avenue and Bancroft Avenue. These efforts, in conjunction with the recently completed improvements on Red Bank Road and these new proposed improvements along the Wooster Pike Corridor will re-train the driver to stay on the minor arterial facilities instead of diverting to local residential street. The Access Management plan that includes the Spring Street Access Street as well as the stub streets on the north side of the corridor allows the elimination of all full movement driveways on the north side of the corridor and allows a majority of the driveways on the south side of the corridor to be eliminated, or modified to a minimum width. The center turn lane, the reduction of full access driveways and the reduced speed will result in fewer accidents along the Corridor.

3) How important is the project to the health of the Public and the citizens of the District and/or service area?
Give a statement of the projects effect on the health of the service area. The design of the project will improve the overall condition of the facility so as to reduce or eliminate potential for disease, or correct concerns regarding the environmental health of the area. (Typical examples may include the effects of the completed project by improving or adding storm drainage or sanitary facilities, etc.). Please be specific and provide documentation if necessary to substantiate the data. The applying agency must demonstrate the type of problems that exist, the frequency and severity of the problems and the method of correction.

The travelers in the corridor currently experience delay and aggravation at the inefficiencies of the antiquated traffic signals. The visual clutter along the corridor leads to confusion as many different visual cues give mixed messages to the drivers. Skyline conducted an impromptu study during a lunch hour at their drive-through and found out that several of the drivers experienced fear in making a left-turn out of the drive-thru driveway across two lanes of speeding traffic. These items

are very real and are known contributors to health problems that could occur with the travelers of the corridors.

4) Does the project help meet the infrastructure repair and replacement needs of the applying jurisdiction?

The applying agency must submit a listing in priority order of the projects for which it is applying. Points will be awarded on the basis of most to least importance.

Priority 1 Wooster Pike Project

Priority 2 Spring Street Culvert Replacement

Priority 3

Priority 4

Priority 5

5) To what extent will the user fee funded agency be participating in the funding of the project? (example: rates for water or sewer, frontage assessments, etc.).

Zero

6) Economic Growth – How will the completed project enhance economic growth

Give a statement of the projects effect on the economic growth of the service area (be specific).

In our meetings the past three months with the numerous existing businesses along the corridor, many businesses have said that new growth will occur as better parking and safer accessibility become part of the business district. Skyline Chili recently purchased the vacant KFC property next to their existing property. Mike Misleh, owner of the Skyline, has said that because of the additional parking, his business has picked up and he has hired more personnel. He expects to hire more people as a result of this project. In addition, Dr. Sayre's Dentist office is planning an expansion and has bought the property next to his existing building. In meetings with his Dr. Sayre and his architect, the addition of additional parking adjacent to his site will allow him to add at least one more dentist and hygienists to support six more chairs. Just as the road improvement to the Red Bank Road Corridor has yielded much developer attention and as a result over $100 million is redevelopment is currently underway, the Village of Fairfax fields call frequently about development opportunities along the Wooster Pike Corridor.

7) Matching Funds - LOCAL

The information regarding local matching funds is to be filed by the applying agency in Section 1.2 (b) of the Ohio Public Works Association's "Application For Financial Assistance" form.

Not applicable for this project.

8) Matching Funds - OTHER

The information regarding local matching funds is to be filed by the applying agency in Section 1.2 (c) of the Ohio Public Works Association's "Application For Financial Assistance" form. If MRF funds are being used for matching funds, the MRF application must have been filed by **Friday, August 29, 2008** for this project with the Hamilton County Engineer's Office. List below all "other" funding the source(s).

The Village of Fairfax, Ohio has acquired Congestion Mitigation Air Quality (CMAQ) funds totaling $1,993,016.00.

9) Will the project alleviate serious capacity problems or respond to the future level of service needs of the district?

Describe how the proposed project will alleviate serious capacity problems (be specific).

Currently there are not serious capacity problems along the corridor. However, the signals are very old and technologically out-of-date. They lack pedestrian pushbutton and crossing phases. They are pre-timed signals and field review revealed that many of these pre-timed phases, such as the westbound left-turn phase on Wooster Pike at Meadowlark Lane did not have any vehicles use those phases during the AM Peak Hour. Another example is the Wooster Pike eastbound leading phase at the Watterson Road intersection. Red-light running and 'rabbit' starts and stops at these intersections were observed during field reviews. Conversations with Village of Fairfax Police indicate these observations are common events. The growth of this corridor is unsure at this point. Currently, this corridor is the main path for travel from I-71 and the City of Cincinnati to SR 32. However, the Eastern Corridor Project may divert this major travel path to SR 32 to a new interchange at Red Bank Road just before the Wooster Pike Corridor. In this case, the project that in Stage 2 of design will decrease the traffic along the Wooster Pike Corridor. Therefore, it was assumed that the existing capacity analysis will be much greater than the future capacity needs.

Level of Service (LOS) calculations shall be for the improvements being made in the application. If this project is a phase of a larger project then any preceding phases shall be considered existing conditions for LOS calculations. Any future project phases shall not be considered as part of this applications LOS calculations.

For roadway betterment projects, provide the existing and proposed Level of Service (LOS) of the facility using the methodology outlined within AASHTO'S "Geometric Design of Highways and Streets" and the current edition of the Highway Capacity Manual.

No Build	Proposed Geometry
Current Year LOS: Meadowlark AM & PM: C; Watterson AM & PM: B	Current Year LOS 2007
Design Year LOS: Meadowlark AM & PM: C; Watterson AM & PM: B	Design Year LOS 2007

If the proposed design year LOS is not "C" or better, explain why LOS "C" cannot be achieved.

The proposed and design year level of service is the same. The total delay for the existing AM and PM peaks for both intersections is 72.5 seconds of delay. The total delay for the proposed AM and PM peaks for both intersections is 69.9 seconds of delay. This is after going from a four-lane section with two-lanes in each direction, to a three-lane section with one lane in each direction.

10) If SCIP/LTIP funds were granted, when would the construction contract be awarded?

If SCIP/LTIP funds are awarded, how soon after receiving the Project Agreement from OPWC (tentatively set for July 1 of the year following the deadline for applications) would the project be under contract? The Support Staff will review status reports of previous projects to help judge the accuracy of a jurisdiction's anticipated project schedule.

Number of months 24

a.) Are preliminary plans or engineering completed?	Yes X	No	N/A
b.) Are detailed construction plans completed?	Yes	No X	N/A
c.) Are all utility coordination's completed?	Yes X	No	N/A
d.) Are all right-of-way and easements acquired (if applicable)?	Yes	No X	N/A

If no, how many parcels needed for project? 39 Of these, how many are: Takes 5

Temporary 4

Permanent 30

For any parcels not yet acquired, explain the status of the ROW acquisition process for this project.

The acquisition of the properties will begin on July 01, 2010, as stipulated by the CMAQ funding, to be completed by January 15, 2011. Initial contact has been made.

e.) Give an estimate of time needed to complete any item above not yet completed. 7 Months.

11) Does the infrastructure have regional impact?

Give a brief statement concerning the regional significance of the infrastructure to be replaced, repaired, or expanded.

The Wooster Pike Corridor is a Minor Arterial and connects I-71 and the City of Cincinnati to SR 32. It is a major corridor and connects the east side of Hamilton County and Clermont County to Cincinnati.

12) What is the overall economic health of the jurisdiction?

The District 2 Integrating Committee predetermines the jurisdiction's economic health. The economic health of a jurisdiction may periodically be adjusted when census and other budgetary data are updated.

13) Has any formal action by a federal, state, or local government agency resulted in a partial or complete ban of the usage or expansion of the usage for the involved infrastructure?

Describe what formal action has been taken which resulted in a ban of the use of or expansion of use for the involved infrastructure? Typical examples include weight limits, truck restrictions, and moratoriums or limitations on issuance of building permits, etc. The ban must have been caused by a structural or operational problem to be considered valid. Submission of a copy of the approved legislation would be helpful.

Not applicable for this project.

Will the ban be removed after the project is completed? Yes _____ No _____ N/A _____

14) What is the total number of existing daily users that will benefit as a result of the proposed project?

For roads and bridges, multiply current Average Daily Traffic (ADT) by 1.20. For inclusion of public transit, submit documentation substantiating the count. Where the facility currently has any restrictions or is partially closed, use documented traffic counts prior to the restriction. For storm sewers, sanitary sewers, water lines, and other related facilities, multiply the number of households in the service area by 4. User information must be documented and certified by a professional engineer or the jurisdictions' C.E.O.

Traffic: ADT 21,750 X 1.20 = 26,100 Users

Transit: ADT 3,800 X 1.20 = 4,560 Users

Total Traffic and Transit: 30,660 Users

Water/Sewer: Homes _____ X 4.00 = _____ Users

15) Has the jurisdiction enacted the optional $5 license plate fee, an infrastructure levy, a user fee, or dedicated tax for the pertinent infrastructure?

The applying jurisdiction shall list what type of fees, levies or taxes they have dedicated toward the type of infrastructure being applied for. (Check all that apply)

Optional $5.00 License Tax X

Infrastructure Levy _____ Specify type _____

Facility Users Fee _____ Specify type _____

Dedicated Tax _____ Specify type _____

Other Fee, Levy or Tax _____ Specify type _____

SCIP/LTIP PROGRAM
ROUND 23 - PROGRAM YEAR 2009
PROJECT SELECTION CRITERIA
JULY 1, 2009 TO JUNE 30, 2010

NAME OF APPLICANT: FAIRFAX

NAME OF PROJECT: WOOSTER PIKE

RATING TEAM: 5

General Statement for Rating Criteria

Points awarded for all items will be based on engineering experience, field verification, application information and other information supplied by the applying agency, which is deemed to be relevant by the Support Staff. The examples listed in this addendum are not a complete list, but only a small sampling of situations that may be relevant to a given project.

CIRCLE THE APPROPRIATE RATING

1) **What is the physical condition of the existing infrastructure that is to be replaced or repaired?**

25 - Failed
23 - Critical
20 - Very Poor
17 - Poor
15 - Moderately Poor
10 - Moderately Fair
5 - Fair Condition
(0) - Good or Better

Appeal Score

_____

Criterion 1 - Condition

Condition of the particular infrastructure to be repaired, reconstructed or replaced shall be a measure of the degree of reduction in condition from its original state. Historic pavement management data based on ASTM D6433-99 rating system may be submitted as documentation. Capacity, serviceability, safety and health shall not be considered in this criterion. Any documentation the Applicant wishes to be considered must be included in the application package.

Definitions:

Failed Condition - requires complete reconstruction where no part of the existing facility is salvageable. (E.g. Roads: complete reconstruction of roadway, curbs and base; Bridges: complete removal and replacement of bridge; Underground: removal and replacement of an underground drainage or water system.

Critical Condition - requires partial reconstruction to maintain integrity. (E.g. Roads: reconstruction of roadway/curbs can be saved; Bridges: removal and replacement of bridge with abutment modification; Underground: removal and replacement of part of an underground drainage or water system.

Very Poor Condition - requires extensive rehabilitation to maintain integrity. (E.g. Roads: extensive full depth, partial depth and curb repair of a roadway with a structural overlay; Bridges: superstructure replacement; Underground: repair of joints and/or replacement of pipe sections.

Poor Condition - requires standard rehabilitation to maintain integrity. (E.g. Roads: moderate full depth, partial depth and curb repair to a roadway with no structural overlay needed or structural overlay with minor repairs to a roadway needed; Bridges: extensive patching of substructure and replacement of deck; Underground: insituform or other in ground repairs.

Moderately Poor Condition - requires minor rehabilitation to maintain integrity. (E.g. Roads: minor full depth, partial depth or curb repairs to a roadway with either a thin overlay or no overlay needed; Bridges: major structural patching and/or major deck repair.

Moderately Fair Condition - requires extensive maintenance to maintain integrity. (E.g. Roads: thin or no overlay with extensive crack sealing, minor partial depth and/or slurry or rejuvenation; Bridges: minor structural patching, deck repair, erosion control.)

Fair Condition - requires routine maintenance to maintain integrity. (E.g. Roads: slurry seal, rejuvenation or routine crack sealing to the roadway; Bridges: minor structural patching.)

Good or Better Condition - little to no maintenance required to maintain integrity.

Note: **If the infrastructure is in "good" or better condition, it will NOT be considered for SCIP/LTIP funding unless it is an expansion project that will improve serviceability.**

2) **How important is the project to the safety of the Public and the citizens of the District and/or service area?**

25 - Highly significant importance
20 - Considerably significant importance
15 - Moderate importance
10 - Minimal importance
5 - Poorly documented importance
0 - No measurable impact

No OH I's

Appeal Score _____

Criterion 2 – Safety
The applying agency shall include in its application the type of deficiency that currently exists and how the intended project would improve the situation. For example, have there been vehicular accidents attributable to the problems cited? Have they involved injuries or fatalities? In the case of water systems, are existing hydrants non-functional? In the case of water lines, is the present capacity inadequate to provide volumes or pressure for adequate fire protection? **In all cases, specific documentation is required.** Mentioned problems, which are poorly documented, generally will not receive more than 5 points.

Note: Each project is looked at on an individual basis to determine if any aspects of this category apply. **Examples given above are NOT intended to be exclusive.**

3) **How important is the project to the health of the Public and the citizens of the District and/or service area?**

25 - Highly significant importance
20 - Considerably significant importance
15 - Moderate importance
10 - Minimal importance
5 - Poorly documented importance
0 - No measurable impact

Appeal Score _____

Criterion 3 – Health
The applying agency shall include in its application the type, frequency, and severity of the health problem that would be eliminated or reduced by the intended project. For example, can the problem be eliminated only by the project, or would routine maintenance be satisfactory? If basement flooding has occurred, was it storm water or sanitary flow? What complaints if any are recorded? In the case of underground improvements, how will they improve health if they are storm sewers? How would improved sanitary sewers improve health or reduce health risk? **In all cases, quantified documentation is required.** Mentioned problems, which are poorly documented, generally will not receive more than 5 points.

Note: Each project is looked at on an individual basis to determine if any aspects of this category apply. **Examples given above are NOT intended to be exclusive.**

4) **Does the project help meet the infrastructure repair and replacement needs of the applying agency?**
Note: Applying agency's priority listing (part of the Additional Support Information) must be filed with application(s).

25 - First priority project
20 - Second priority project
15 -Third priority project
10 - Fourth priority project
5 - Fifth priority project or lower

Appeal Score _____

Criterion 4 – Jurisdiction's Priority Listing
The applying agency **must** submit a listing in priority order of the projects for which it is applying. Points will be awarded on the basis of most to least importance. The form is included in the Additional Support Information.

5) **To what extent will a user fee funded agency be participating in the funding of the project?**

10 – Less than 10%
9 – 10% to 19.99%
8 – 20% to 29.99%
7 – 30% to 39.99%
6 – 40% to 49.99%
5 – 50% to 59.99%
4 – 60% to 69.99%
3 – 70% to 79.99%
2 – 80% to 89.99%
1 – 90% to 95%
0 – Above 95%

Appeal Score _____

Criterion 5 – User Fee-funded Agency Participation
To what extent will a user fee funded agency be participating in the funding of the project? (Example: rates for water or sewer, frontage assessments, etc.). The applying agency must submit documentation.

6) **Economic Growth – How the completed project will enhance economic growth (See definitions).**

10 – The project will directly secure new employment
5 – The project will permit more development
0 – The project will not impact development

Appeal Score _____

Criterion 6 – Economic Growth
Will the completed project enhance economic growth and/or development [redacted]?

Definitions:

Secure new employment: The project as designed will secure development/employers, which will immediately add new permanent employees [redacted]. The applying agency must submit details.

Permit more development: The project as designed will permit additional business development/employment. The applying agency must supply details.

The project will not impact development: The project will have no impact on business development.

Note: **Each project is looked at on an individual basis to determine if any aspects of this category apply.**

7) **Matching Funds - LOCAL**

10 - This project is a loan or credit enhancement
10 – 50% or higher
8 – 40% to 49.99%
6 – 30% to 39.99%
4 – 20% to 29.99%
2 – 10% to 19.99%
0 – Less than 10%

List total percentage of "Local" funds 6 **%**

Criterion 7 – Matching Funds – Local

The percentage of matching funds which come directly from the budget of the applying agency. Ten points shall be awarded if a loan request is at least 50% of the total project cost. (If the applying agency is not a user fee funded agency, any funds to be provided by a user fee generating agency will be considered "Matching Funds – Other").

8) **Matching Funds – OTHER** **List total percentage of "Other" funds _____%**

10 – 50% or higher
(8) – 40% to 49.99%
6 – 30% to 39.99%
4 – 20% to 29.99%
2 – 10% to 19.99%
1 – 1% to 9.99%
0 – Less than 1%

List below each funding source and percentage

CMAQ	43 %
	%
	%
	%
	%

Criterion 8 – Matching Funds - Other
The percentage of matching funds that come from funding sources other than those mentioned in Criterion 7. A letter from the outside funding agency stating their financial participation in the project and the amount of funding is required to receive points. For MRF, a copy of the current application form filed with the Hamilton County Engineer's Office meets the requirement.

9) **Will the project alleviate serious capacity problems or hazards or respond to the future level of service needs of the district?**

10 - Project design is for future demand.
8 - Project design is for partial future demand.
6 - Project design is for current demand.
4 - Project design is for minimal increase in capacity.
(0) - Project design is for no increase in capacity.

Appeal Score

_____

Criterion 9 – Alleviate Capacity Problems
The applying agency shall provide a narrative, along with pertinent support documentation, which describe the existing deficiencies and showing how congestion will be reduced or eliminated and how service will be improved to meet the needs of any expected growth or development. A formal capacity analysis must accompany the application to receive more than 4 points. Projected traffic or demand should be calculated as follows:

Formula:
Existing volume x design year factor = projected volume

Design Year	Design year factor		
	Urban	Suburban	Rural
20	1.40	1.70	1.60
10	1.20	1.35	1.30

Definitions:
Future demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service for twenty-year projected demand or fully developed area conditions. Justification must be supplied if the area is already largely developed or undevelopable and thus the projection factors used deviate from the above table.
Partial future demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service for ten-year projected demand or partially developed area conditions. Justification must be supplied if the area is already largely developed or undevelopable and thus the projection factors used deviate from the above table.
Current demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service only for existing demand and conditions.
Minimal increase – Project will reduce but not eliminate existing congestion or deficiencies and will provide a minimal but less than sufficient increase in existing capacity or service for existing demand and conditions.
No increase – Project will have no effect on existing congestion or deficiencies and provide no increase in capacity or service for existing demand and conditions.

10) **Readiness to Proceed - If SCIP/LTIP funds are granted, when would the construction contract be awarded?**

3 **Will be under contract by December 31, 2009 and no delinquent projects in Rounds 20 & 21**
Will be under contract by March 31, 2010 and/or one delinquent project in Rounds 20 & 21
Will not be under contract by March 31, 2010 and/or more than one delinquent project in Rounds 20 & 21

3

Criterion 10 – Readiness to Proceed
The Support Staff will assign points based on engineering experience and status of design plans. A project is considered delinquent when it has not received a notice to proceed within the time stated on the original application and no time extension has been granted by the OPWC. An applying agency receiving approval for a project and subsequently canceling the same after the bid date on the application will receive zero (0) points under this round and the following round.

11) **Does the infrastructure have regional impact? Consider origination and destination of traffic, functional classifications, size of service area, and number of jurisdictions served, etc.**

10 – Major Impact **Appeal Score**
8 – Significant Impact
6 – Moderate Impact _____
4 – Minor Impact
2 – Minimal or No Impact

Criterion 11 - Regional Impact
The regional significance of the infrastructure that is being repaired or replaced.
Definitions:

Major Impact – Roads: Major Arterial: A direct connector to an Interstate Highway; Arterials are intended to provide a greater degree of mobility rather than land access. Arterials generally convey large traffic volumes for distances greater than one mile. A major arterial is a highway that is of regional importance and is intended to serve beyond the county. It may connect urban centers with one another and/or with outlying communities and employment or shopping centers. A major arterial is intended primarily to serve through traffic.

Significant Impact – Roads: Minor Arterial: A roadway, also serving through traffic, that is similar in function to a major arterial, but operates with lower traffic volumes, serves trips of shorter distances (but still greater than one mile), and may provide a higher degree of property access than do major arterials.

Moderate Impact – Roads: Major Collector: A roadway that provides for traffic movement between local roads/streets and arterials or community-wide activity centers and carries moderate traffic volumes over moderate distances (generally less than one mile). Major collectors may also provide direct access to abutting properties, such as regional shopping centers, large industrial parks, major subdivisions and community-wide recreational facilities, but typically not individual residences. Most major collectors are also county roads and are therefore through streets.

Minor Impact – Roads: Minor Collector: A roadway similar in functions to a major collector but which carries lower traffic volumes over shorter distances and has a higher degree of property access. Minor collectors may serve as main circulation streets within large, residential neighborhoods. Most minor collectors are also township roads and streets and may, or may not, be through streets.

Minimal or No Impact - Roads: Local: A roadway that is primarily intended to provide access to abutting properties. It tends to accommodate lower traffic volumes, serves short trips (generally within neighborhoods), and provides connections preferably only to collector streets rather than arterials.

12) **What is the overall economic health of the jurisdiction?**

10 Points
8 Points
6 Points
4 Points
2 Points

Criterion 12 – Economic Health
The District 2 Integrating Committee predetermines the applying agency's economic health. The economic health of a jurisdiction may periodically be adjusted when census and other budgetary data are updated.

13) **Has any formal action by a federal, state, or local government agency resulted in a partial or complete ban of the usage or expansion of the usage for the involved infrastructure?**

10 - Complete ban, facility closed
8 – 80% reduction in legal load or 4-wheeled vehicles only
7 – Moratorium on future development, *not* functioning for current demand
6 – 60% reduction in legal load
5 - Moratorium on future development, functioning for current demand
4 – 40% reduction in legal load
2 – 20% reduction in legal load
0 – Less than 20% reduction in legal load

Appeal Score _____

Criterion 13 - Ban
The applying agency shall provide documentation to show that a facility ban or moratorium has been formally placed. The ban or moratorium must have been caused by a structural or operational problem. Points will only be awarded if the end result of the project will cause the ban to be lifted.

14) **What is the total number of existing daily users that will benefit as a result of the proposed project?**

10 - 30,000 or more
8 - 21,000 to 29,999
6 - 12,000 to 20,999
4 - 3,000 to 11,999
2 - 2,999 and under

30,660

Appeal Score _____

Criterion 14 - Users
The applying agency shall provide documentation. A registered professional engineer or the applying agency's C.E.O must certify the appropriate documentation. Documentation may include current traffic counts, households served, when converted to a measurement of persons. Public transit users are permitted to be counted for the roads and bridges, but only when certifiable ridership figures are provided.

15) **Has the applying agency enacted the optional $5 license plate fee, an infrastructure levy, a user fee, or dedicated tax for the pertinent infrastructure?** ***(Provide documentation of which fees have been enacted.)***

5 - Two or more of the above
3 - One of the above
0 - None of the above

Appeal Score _____

Criterion 15 – Fees, Levies, Etc.
The applying agency shall document (in the "Additional Support Information" form) which type of fees, levies or taxes they have dedicated toward the **type** of infrastructure being applied for.

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 3/18/2008
Period: 7:30 AM-8:30 AM
Project ID: AM existing conditions
E/W St: US 50

Inter.: US 50 and Meadowlark
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008

N/S St: Meadowlark/Wooster Pike

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	1	0
LGConfig	L	TR		L	TR		L	TR		L	TR	
Volume	11	285	59	91	765	11	28	14	202	21	16	35
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol			20			5			100			10

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P	P			NB Left	P			
Thru		P			Thru	P			
Right		P			Right	P			
Peds					Peds	X			
WB Left	P	P			SB Left	P			
Thru		P			Thru	P			
Right		P			Right	P			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	19.0	37.0				24.0			
Yellow		3.0				3.0			
All Red	0.0	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	429	1624	0.03	0.62	8.4	A		
TR	1254	3050	0.29	0.41	18.3	B	18.0	B
Westbound								
L	634	1624	0.16	0.62	7.6	A		
TR	1269	3086	0.68	0.41	24.5	C	22.8	C
Northbound								
L	331	1243	0.09	0.27	25.4	C		
TR	396	1485	0.33	0.27	28.7	C	28.1	C
Southbound								
L	306	1149	0.08	0.27	25.2	C		
TR	414	1554	0.11	0.27	25.5	C	25.4	C

Intersection Delay = 22.3 (sec/veh) Intersection LOS = C

PHASE DATA

Phase Combination		1	2	3	4		5	6	7	8
EB	Left	P	P			NB	Left	P		
	Thru		P				Thru	P		
	Right		P				Right	P		
	Peds						Peds	X		
WB	Left	P	P			SB	Left	P		
	Thru		P				Thru	P		
	Right		P				Right	P		
	Peds						Peds			
NB	Right					EB	Right			
SB	Right					WB	Right			
Green		19.0	37.0					24.0		
Yellow			3.0					3.0		
All Red		0.0	2.0					2.0		

Cycle Length: 90.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	11	285	59	91	765	11	28	14	202	21	16	35
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj flow	12	317	43	101	850	7	31	16	113	23	18	28
No. Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Lane group	L	TR		L	TR		L	TR		L	TR	
Adj flow	12	360		101	857		31	129		23	46	
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs	0.119			0.008			0.876			0.609		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	L	TR		L	TR		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes	1	2	0	1	2	0	1	1	0	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	1.000	0.958		1.000	0.953		1.000	1.000		1.000	1.000	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	0.996		1.000	0.996		1.000	1.000		1.000	1.000	
fA	0.900	0.900		0.900	0.900		0.900	0.900		0.900	0.900	
fLU	1.000	0.952		1.000	0.952		1.000	1.000		1.000	1.000	
fRT		0.982			0.999			0.869			0.909	
fLT	0.950	1.000		0.950	1.000		0.727	1.000		0.672	1.000	
Sec.	0.185			0.454								
fLpb	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fRpb		1.000			1.000			1.000			1.000	
S	1624	3050		1624	3086		1243	1485		1149	1554	
Sec.	316			776								

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 22.3 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M	M	M
Cycle length, C 90.0 sec				
Total actual green time for LT lane group, G (s)	56.0	56.0	24.0	24.0
Effective permitted green time for LT lane group, g(s)	40.0	40.0	24.0	24.0
Opposing effective green time, go (s)	37.0	37.0	24.0	24.0
Number of lanes in LT lane group, N	1	1	1	1
Number of lanes in opposing approach, No	2	2	1	1
Adjusted LT flow rate, VLT (veh/h)	12	101	31	23
Proportion of LT in LT lane group, PLT	1.000	1.000	1.000	1.000
Proportion of LT in opposing flow, PLTo	0.00	0.00	0.00	0.00
Adjusted opposing flow rate, Vo (veh/h)	857	360	46	129
Lost time for LT lane group, tL	5.00	5.00	5.00	5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	0.30	2.53	0.78	0.57
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	11.25	4.73	1.15	3.22
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00	1.00	1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.59	0.59	0.73	0.73
gq, (see Exhibit C16-4,5,6,7,8)	17.67	6.22	0.00	0.10
gu=g-gq if gq>=gf, or = g-gf if gq<gf	22.33	33.78	24.00	23.90
n=Max(gq-gf)/2,0)	8.84	3.11	0.00	0.05
PTHo=1-PLTo	1.00	1.00	1.00	1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	1.00	1.00	1.00	1.00
EL1 (refer to Exhibit C16-3)	3.02	1.86	1.38	1.48
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.10	0.10	0.17	0.17
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.18	0.45	0.73	0.67
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.185	0.454	0.727	0.672

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 90.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

OCCbicg	0.020
OCCr	0.000
Number of cross-street receiving lanes, Nrec	2
Number of turning lanes, Nturn	1
ApbT	1.000
Proportion right-turns, PRT	0.876
Proportion right-turns using protected phase, PRTA	0.000
Right turn adjustment, fRpb	1.000

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

		EBLT	WBLT	NBLT	SBLT
Cycle length, C	90.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v		12	101		
v/c ratio from Capacity Worksheet, X		0.03	0.16		
Protected phase effective green interval, g (s)		16.0	16.0		
Opposing queue effective green interval, gq		17.67	6.22		
Unopposed green interval, gu		22.33	33.78		
Red time r=(C-g-gq-gu)		34.0	34.0		
Arrival rate, qa=v/(3600(max[X,1.0]))		0.00	0.03		
Protected ph. departure rate, Sp=s/3600		0.451	0.451		
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)		0.16	0.26		
XPerm		0.04	0.13		
XProt		0.02	0.19		
Case		1	1		
Queue at beginning of green arrow, Qa		0.11	0.95		
Queue at beginning of unsaturated green, Qu		0.06	0.17		
Residual queue, Qr		0.00	0.00		
Uniform Delay, d1		8.2	7.1		

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
L	0.0	0.00		8.2	0.00	0.0	0.0	8.4
TR	0.0	0.00	26.5	17.7	0.00	0.0	0.0	18.3
	0.0						0.0	
Westbound								
L	0.0	0.00		7.1	0.00	0.0	0.0	7.6
TR	0.0	0.00	26.5	21.6	0.00	0.0	0.0	24.5
	0.0						0.0	
Northbound								
L	0.0	0.00	33.0	24.8	0.00	0.0	0.0	25.4
TR	0.0	0.00	33.0	26.5	0.00	0.0	0.0	28.7
	0.0						0.0	
Southbound								
L	0.0	0.00	33.0	24.7	0.00	0.0	0.0	25.2
TR	0.0	0.00	33.0	24.9	0.00	0.0	0.0	25.5
	0.0						0.0	

Intersection Delay 22.3 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 3/18/2008
Period: 4:45 PM-5:45 PM
Project ID: PM Existing Conditions
E/W St: US 50

Inter.: US 50 and Meadowlark
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008

N/S St: Meadowlark/Wooster Pike

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	1	1	0
LGConfig	L	TR		L	TR			LT	R	L	TR	
Volume	87	686	38	120	370	11	85	11	171	28	10	29
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0	12.0	12.0	
RTOR Vol			0			0			60			0

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P	P			NB	Left	P			
	Thru		P				Thru	P			
	Right		P				Right	P			
	Peds						Peds	X			
WB	Left	P	P			SB	Left	P			
	Thru		P				Thru	P			
	Right		P				Right	P			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		19.0	37.0					24.0			
Yellow			3.0					3.0			
All Red			2.0					2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	578	1605	0.17	0.62	7.8	A		
TR	1268	3084	0.63	0.41	23.6	C	21.9	C
Westbound								
L	424	1624	0.31	0.62	10.8	B		
TR	1271	3092	0.33	0.41	18.8	B	16.9	B
Northbound								
LT	328	1230	0.32	0.27	29.1	C	28.8	C
R	388	1454	0.32	0.27	28.6	C		
Southbound								
L	314	1177	0.10	0.27	25.5	C		
TR	405	1519	0.11	0.27	25.4	C	25.5	C

Intersection Delay = 21.3 (sec/veh) Intersection LOS = C

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P	P			NB	Left	P			
	Thru		P				Thru	P			
	Right		P				Right	P			
	Peds						Peds	X			
WB	Left	P	P			SB	Left	P			
	Thru		P				Thru	P			
	Right		P				Right	P			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		19.0	37.0					24.0			
Yellow			3.0					3.0			
All Red			2.0					2.0			

Cycle Length: 90.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	87	686	38	120	370	11	85	11	171	28	10	29
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj flow	97	762	42	133	411	12	94	12	123	31	11	32
No. Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Lane group	L	TR		L	TR			LT	R	L	TR	
Adj flow	97	804		133	423			106	123	31	43	
Prop LTs	1.000	0.000		1.000	0.000			0.887		1.000	0.000	
Prop RTs		0.052			0.028			0.000	1.000		0.744	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound		Southbound		
LG	L	TR		L	TR		LT	R	L	TR	
So	1900	1900		1900	1900		1900	1900	1900	1900	
Lanes	1	2	0	1	2	0	0	1	1	1	1	0
fW	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fHV	1.000	0.955		1.000	0.954			1.000	1.000	1.000	1.000	
fG	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fP	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fBB	0.988	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fA	0.900	0.900		0.900	0.900			0.900	0.900	0.900	0.900	
fLU	1.000	0.952		1.000	0.952			1.000	1.000	1.000	1.000	
fRT		0.992			0.996			1.000	0.850		0.888	
fLT	0.950	1.000		0.950	1.000			0.719		0.689	1.000	
Sec.	0.416			0.214								
fLpb	1.000	1.000		1.000	1.000			1.000		1.000	1.000	
fRpb		1.000			1.000			1.000	1.000		1.000	
S	1605	3084		1624	3092			1230	1454	1177	1519	
Sec.	702			366								

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 21.3 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M		M
Cycle length, C 90.0 sec				
Total actual green time for LT lane group, G (s)	56.0	56.0		24.0
Effective permitted green time for LT lane group, g(s)	42.0	42.0		24.0
Opposing effective green time, go (s)	37.0	37.0		24.0
Number of lanes in LT lane group, N	1	1		1
Number of lanes in opposing approach, No	2	2		1
Adjusted LT flow rate, VLT (veh/h)	97	133		31
Proportion of LT in LT lane group, PLT	1.000	1.000		1.000
Proportion of LT in opposing flow, PLTo	0.00	0.00		0.89
Adjusted opposing flow rate, Vo (veh/h)	423	804		106
Lost time for LT lane group, tL	5.00	5.00		5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	2.42	3.33		0.78
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	5.55	10.56		2.65
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00		1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.59	0.59		0.73
gq, (see Exhibit C16-4,5,6,7,8)	7.46	16.24		0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf	34.54	25.76		24.00
n=Max(gq-gf)/2,0)	3.73	8.12		0.00
PTHo=1-PLTo	1.00	1.00		0.11
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	1.00	1.00		1.00
EL1 (refer to Exhibit C16-3)	1.98	2.87		1.45
EL2=Max((1-Ptho**n)/Plto, 1.0)				1.00
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.10	0.10		0.17
gdiff=max(gq-gf,0)	0.00	0.00		0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.42	0.21		0.69
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.416	0.214		0.689

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach			M	
Cycle length, C 90.0 sec				
Total actual green time for LT lane group, G (s)			24.0	
Effective permitted green time for LT lane group, g(s)			24.0	
Opposing effective green time, go (s)			24.0	
Number of lanes in LT lane group, N			1	

OCCbicg	0.020
OCCr	0.000
Number of cross-street receiving lanes, Nrec	2
Number of turning lanes, Nturn	1
ApbT	1.000
Proportion right-turns, PRT	1.000
Proportion right-turns using protected phase, PRTA	0.000
Right turn adjustment, fRpb	

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

		EBLT	WBLT	NBLT	SBLT
Cycle length, C	90.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v		97	133		
v/c ratio from Capacity Worksheet, X		0.17	0.31		
Protected phase effective green interval, g (s)		14.0	14.0		
Opposing queue effective green interval, gq		7.46	16.24		
Unopposed green interval, gu		34.54	25.76		
Red time r=(C-g-gq-gu)		34.0	34.0		
Arrival rate, qa=v/(3600(max[X,1.0]))		0.03	0.04		
Protected ph. departure rate, Sp=s/3600		0.446	0.451		
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)		0.24	0.17		
XPerm		0.14	0.36		
XProt		0.21	0.28		
Case		1	1		
Queue at beginning of green arrow, Qa		0.92	1.26		
Queue at beginning of unsaturated green, Qu		0.20	0.60		
Residual queue, Qr		0.00	0.00		
Uniform Delay, d1		7.2	8.9		

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
L	0.0	0.00		7.2	0.00	0.0	0.0	7.8
TR	0.0	0.00	26.5	21.1	0.00	0.0	0.0	23.6
	0.0						0.0	
Westbound								
L	0.0	0.00		8.9	0.00	0.0	0.0	10.8
TR	0.0	0.00	26.5	18.1	0.00	0.0	0.0	18.8
	0.0						0.0	
Northbound								
	0.0						0.0	
LT	0.0	0.00	33.0	26.5	0.00	0.0	0.0	29.1
R	0.0	0.00	33.0	26.4	0.00	0.0	0.0	28.6
Southbound								
L	0.0	0.00	33.0	24.9	0.00	0.0	0.0	25.5
TR	0.0	0.00	33.0	24.9	0.00	0.0	0.0	25.4
	0.0						0.0	

Intersection Delay 21.3 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 3/18/2008
Period: 7:30 AM-8:30 AM
Project ID: Wooster and Watterson Existing
E/W St: US 50

Inter.: Wooster and Watterson
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Watterson

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	26	417	3	1	877	96	3	2	0	88	2	52
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			10			0			0

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P			
Thru	P					Thru	P			
Right	P					Right	P			
Peds						Peds				
WB Left	P				SB	Left	P			
Thru	P					Thru	P			
Right	P					Right	P			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	34.0						16.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1529	2698	0.32	0.57	7.5	A	7.5	A
Westbound								
LTR	1662	2933	0.64	0.57	10.8	B	10.8	B
Northbound								
LTR	402	1507	0.01	0.27	16.2	B	16.2	B
Southbound								
LTR	350	1314	0.45	0.27	22.6	C	22.6	C

Intersection Delay = 11.0 (sec/veh) Intersection LOS = B

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	P				SB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	34.0				16.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	26	417	3	1	877	96	3	2	0	88	2	52
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj flow	29	463	3	1	974	96	3	2	0	98	2	58
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Adj flow		495			1071			5			158	
Prop LTs		0.059			0.001			0.600			0.620	
Prop RTs		0.006			0.090			0.000			0.367	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LTR			LTR			LTR			LTR		
So	1900			1900			1900			1900		
Lanes	0 2	0	0	0 2	0	0	0 1	0	0	0 1	0	
fW	1.000			1.000			1.000			1.000		
fHV	0.955			0.957			1.000			1.000		
fG	1.000			1.000			1.000			1.000		
fP	1.000			1.000			1.000			1.000		
fBB	1.000			1.000			1.000			1.000		
fA	0.900			0.900			0.900			0.900		
fLU	0.952			0.952			1.000			1.000		
fRT	0.999			0.987			1.000			0.950		
fLT	0.868			0.955			0.881			0.808		
Sec.												
fLpb	1.000			1.000			1.000			1.000		
fRpb	1.000			1.000			1.000			1.000		
S	2698			2933			1507			1314		
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 11.0 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				
Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT				
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M	S	S
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)	34.0	34.0	16.0	16.0
Effective permitted green time for LT lane group, g(s)	34.0	34.0	16.0	16.0
Opposing effective green time, go (s)	34.0	34.0	16.0	16.0
Number of lanes in LT lane group, N	2	2	1	1

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

		EBLT	WBLT	NBLT	SBLT
Cycle length, C	60.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v					
v/c ratio from Capacity Worksheet, X					
Protected phase effective green interval, g (s)					
Opposing queue effective green interval, gq					
Unopposed green interval, gu					
Red time r=(C-g-gq-gu)					
Arrival rate, qa=v/(3600(max[X,1.0]))					
Protected ph. departure rate, Sp=s/3600					
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)					
XPerm					
XProt					
Case					
Queue at beginning of green arrow, Qa					
Queue at beginning of unsaturated green, Qu					
Residual queue, Qr					
Uniform Delay, d1					

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	13.0	6.9	0.00	0.0	0.0	7.5
	0.0						0.0	
Westbound								
	0.0						0.0	
LTR	0.0	0.00	13.0	8.9	0.00	0.0	0.0	10.8
	0.0						0.0	
Northbound								
	0.0						0.0	
LTR	0.0	0.00	22.0	16.2	0.00	0.0	0.0	16.2
	0.0						0.0	
Southbound								
	0.0						0.0	
LTR	0.0	0.00	22.0	18.3	0.00	0.0	0.0	22.6
	0.0						0.0	

Intersection Delay 11.0 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 3/18/2008
Period: 4:45 PM-5:45 PM
Project ID: Wooster and Watterson Existing
E/W St: US 50

Inter.: Wooster and Watterson
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Watterson

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	41	1017	3	1	521	76	3	2	1	209	0	67
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			10			0			0

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	P			
Thru	P					Thru	P			
Right	P					Right	P			
Peds						Peds				
WB Left	P				SB	Left	P			
Thru	P					Thru	P			
Right	P					Right	P			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	30.0						20.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1408	2815	0.84	0.50	19.3	B	19.3	B
Westbound								
LTR	1462	2924	0.45	0.50	10.6	B	10.6	B
Northbound								
LTR	493	1479	0.01	0.33	13.4	B	13.4	B
Southbound								
LTR	427	1282	0.72	0.33	28.1	C	28.1	C

Intersection Delay = 17.9 (sec/veh) Intersection LOS = B

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	P				SB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				20.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	41	1017	3	1	521	76	3	2	1	209	0	67
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.89
Adj flow	46	1130	3	1	579	73	3	2	1	232	0	75
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Adj flow		1179			653			6			307	
Prop LTs		0.039			0.002			0.500			0.756	
Prop RTs		0.003			0.112			0.167			0.244	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LTR			LTR			LTR			LTR		
So	1900			1900			1900			1900		
Lanes	2	0	0	2	0	0	1	0	0	1	0	
fW	1.000			1.000			1.000			1.000		
fHV	0.954			0.958			1.000			1.000		
fG	1.000			1.000			1.000			1.000		
fP	1.000			1.000			1.000			1.000		
fBB	1.000			1.000			1.000			1.000		
fA	0.900			0.900			0.900			0.900		
fLU	0.952			0.952			1.000			1.000		
fRT	1.000			0.983			0.978			0.967		
fLT	0.906			0.954			0.885			0.775		
Sec.												
fLpb	1.000			1.000			1.000			1.000		
fRpb	1.000			1.000			1.000			1.000		
S	2815			2924			1479			1282		
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 17.9 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				
Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT				
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M	S	S
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)	30.0	30.0	20.0	20.0
Effective permitted green time for LT lane group, g(s)	30.0	30.0	20.0	20.0
Opposing effective green time, go (s)	30.0	30.0	20.0	20.0
Number of lanes in LT lane group, N	2	2	1	1

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	60.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
	0.0						0.0	
LTR	0.0	0.00	15.0	12.9	0.00	0.0	0.0	19.3
	0.0						0.0	
Westbound								
	0.0						0.0	
LTR	0.0	0.00	15.0	9.7	0.00	0.0	0.0	10.6
	0.0						0.0	
Northbound								
	0.0						0.0	
LTR	0.0	0.00	20.0	13.4	0.00	0.0	0.0	13.4
	0.0						0.0	
Southbound								
	0.0						0.0	
LTR	0.0	0.00	20.0	17.5	0.00	0.0	0.0	28.1
	0.0						0.0	

Intersection Delay 17.9 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 4/15/2008
Period: 7:30 AM-8:30 AM
Project ID: Meadowlark AM: 1 lane+Dragon Way Open
E/W St: US 50

Inter.: US 50 and Meadowlark
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Meadowlark/Wooster Pike

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
LGConfig	L	TR		L	TR		L	TR		L	TR	
Volume	11	285	59	91	765	11	28	14	202	21	16	35
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol			6			5			20			4

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds	X			
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	45.5					13.5			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 69.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	249	377	0.05	0.66	4.2	A		
TR	1048	1589	0.36	0.66	5.5	A	5.4	A
Westbound								
L	591	896	0.17	0.66	4.6	A		
TR	1064	1614	0.81	0.66	13.3	B	12.4	B
Northbound								
L	242	1236	0.13	0.20	23.1	C		
TR	288	1472	0.76	0.20	38.0	D	36.1	D
Southbound								
L	167	855	0.14	0.20	23.3	C		
TR	302	1542	0.17	0.20	23.4	C	23.4	C

Intersection Delay = 14.8 (sec/veh) Intersection LOS = B

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds	X		
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.5				13.5			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 69.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	11	285	59	91	765	11	28	14	202	21	16	35
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj flow	12	317	59	101	850	7	31	16	202	23	18	34
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Lane group	L	TR		L	TR		L	TR		L	TR	
Adj flow	12	376		101	857		31	218		23	52	
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs		0.157			0.008			0.927			0.654	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	L	TR		L	TR		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes	1	1	0	1	1	0	1	1	0	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	1.000	0.960		1.000	0.953		1.000	1.000		1.000	1.000	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	0.992		1.000	0.992		1.000	1.000		1.000	1.000	
fA	0.900	0.900		0.900	0.900		0.900	0.900		0.900	0.900	
fLU	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fRT		0.976			0.999			0.861			0.902	
fLT	0.221	1.000		0.524	1.000		0.723	1.000		0.500	1.000	
Sec.												
fLpb	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fRpb		1.000			1.000			1.000			1.000	
S	377	1589		896	1614		1236	1472		855	1542	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 14.8 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M	M	M
Cycle length, C 69.0 sec				
Total actual green time for LT lane group, G (s)	45.5	45.5	13.5	13.5
Effective permitted green time for LT lane group, g(s)	45.5	45.5	13.5	13.5
Opposing effective green time, go (s)	45.5	45.5	13.5	13.5
Number of lanes in LT lane group, N	1	1	1	1
Number of lanes in opposing approach, No	1	1	1	1
Adjusted LT flow rate, VLT (veh/h)	12	101	31	23
Proportion of LT in LT lane group, PLT	1.000	1.000	1.000	1.000
Proportion of LT in opposing flow, PLTo	0.00	0.00	0.00	0.00
Adjusted opposing flow rate, Vo (veh/h)	857	376	52	218
Lost time for LT lane group, tL	5.00	5.00	5.00	5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	0.23	1.94	0.59	0.44
Opposing lane util. factor, fLUo	1.000	1.000	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	16.43	7.21	1.00	4.18
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00	1.00	1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.34	0.34	0.80	0.80
gq, (see Exhibit C16-4,5,6,7,8)	16.36	1.21	0.00	2.65
gu=g-gq if gq>=gf, or = g-gf if gq<gf	29.14	44.29	13.50	10.85
n=Max(gq-gf)/2,0)	8.18	0.60	0.00	1.32
PTHo=1-PLTo	1.00	1.00	1.00	1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	1.00	1.00	1.00	1.00
EL1 (refer to Exhibit C16-3)	2.90	1.86	1.38	1.61
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.09	0.09	0.30	0.30
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.22	0.52	0.72	0.50
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.221	0.524	0.723	0.500

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C 69.0 sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

OCCbicg	0.020
OCCr	0.000
Number of cross-street receiving lanes, Nrec	1
Number of turning lanes, Nturn	1
ApbT	1.000
Proportion right-turns, PRT	0.927
Proportion right-turns using protected phase, PRTA	0.000
Right turn adjustment, fRpb	1.000

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

		EBLT	WBLT	NBLT	SBLT
Cycle length, C	69.0 sec				
Adj. LT vol from Vol Adjustment Worksheet, v					
v/c ratio from Capacity Worksheet, X					
Protected phase effective green interval, g (s)					
Opposing queue effective green interval, gq					
Unopposed green interval, gu					
Red time r=(C-g-gq-gu)					
Arrival rate, qa=v/(3600(max[X,1.0]))					
Protected ph. departure rate, Sp=s/3600					
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)					
XPerm					
XProt					
Case					
Queue at beginning of green arrow, Qa					
Queue at beginning of unsaturated green, Qu					
Residual queue, Qr					
Uniform Delay, d1					

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
L	0.0	0.00	11.7	4.1	0.00	0.0	0.0	4.2
TR	0.0	0.00	11.7	5.2	0.00	0.0	0.0	5.5
	0.0						0.0	
Westbound								
L	0.0	0.00	11.7	4.5	0.00	0.0	0.0	4.6
TR	0.0	0.00	11.7	8.5	0.00	0.0	0.0	13.3
	0.0						0.0	
Northbound								
L	0.0	0.00	27.8	22.9	0.00	0.0	0.0	23.1
TR	0.0	0.00	27.8	26.2	0.00	0.0	0.0	38.0
	0.0						0.0	
Southbound								
L	0.0	0.00	27.8	22.9	0.00	0.0	0.0	23.3
TR	0.0	0.00	27.8	23.1	0.00	0.0	0.0	23.4
	0.0						0.0	

Intersection Delay 14.8 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 4/15/2008
Period: 4:45 PM-5:45 PM
Project ID: Meadowlark PM: 1 lane Dragon Way is open
E/W St: US 50

Inter.: US 50 and Meadowlark
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Meadowlark/Wooster Pike

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	1	1	0
LGConfig	L	TR		L	TR			LT	R	L	TR	
Volume	87	686	38	120	370	11	85	11	171	28	10	29
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0	12.0	12.0	
RTOR Vol			0			0			17			0

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	39.8					10.2			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	561	845	0.17	0.66	4.0	A		
TR	1075	1620	0.75	0.66	9.7	A	9.1	A
Westbound								
L	294	443	0.45	0.66	6.0	A		
TR	1077	1624	0.39	0.66	4.8	A	5.1	A
Northbound								
LT	209	1230	0.51	0.17	24.7	C	29.1	C
R	247	1454	0.69	0.17	31.8	C		
Southbound								
L	200	1177	0.16	0.17	21.6	C		
TR	258	1519	0.17	0.17	21.6	C	21.6	C

Intersection Delay = 11.5 (sec/veh) Intersection LOS = B

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	39.8				10.2			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	87	686	38	120	370	11	85	11	171	28	10	29
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj flow	97	762	42	133	411	12	94	12	171	31	11	32
No. Lanes	1	1	0	1	1	0	0	1	1	1	1	0
Lane group	L	TR		L	TR			LT	R	L	TR	
Adj flow	97	804		133	423			106	171	31	43	
Prop LTs	1.000	0.000		1.000	0.000			0.887		1.000	0.000	
Prop RTs		0.052			0.028			0.000	1.000		0.744	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	L	TR		L	TR		LT	R		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes	1	1	0	1	1	0	0	1	1	1	1	0
fW	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fHV	1.000	0.955		1.000	0.954			1.000	1.000	1.000	1.000	
fG	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fP	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fBB	0.988	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fA	0.900	0.900		0.900	0.900			0.900	0.900	0.900	0.900	
fLU	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
fRT		0.992			0.996			1.000	0.850		0.888	
fLT	0.500	1.000		0.259	1.000			0.719		0.689	1.000	
Sec.												
fLpb	1.000	1.000		1.000	1.000			1.000		1.000	1.000	
fRpb		1.000			1.000			1.000	1.000		1.000	
S	845	1620		443	1624			1230	1454	1177	1519	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Intersection delay = 11.5 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach	M	M		M
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)	39.8	39.8		10.2
Effective permitted green time for LT lane group, g(s)	39.8	39.8		10.2
Opposing effective green time, go (s)	39.8	39.8		10.2
Number of lanes in LT lane group, N	1	1		1
Number of lanes in opposing approach, No	1	1		1
Adjusted LT flow rate, VLT (veh/h)	97	133		31
Proportion of LT in LT lane group, PLT	1.000	1.000		1.000
Proportion of LT in opposing flow, PLTo	0.00	0.00		0.89
Adjusted opposing flow rate, Vo (veh/h)	423	804		106
Lost time for LT lane group, tL	5.00	5.00		5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	1.62	2.22		0.52
Opposing lane util. factor, fLUo	1.000	1.000	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	7.05	13.40		1.77
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00		1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.34	0.34		0.83
gq, (see Exhibit C16-4,5,6,7,8)	1.21	11.31		0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf	38.59	28.49		10.20
n=Max(gq-gf)/2,0)	0.60	5.65		0.00
PTHo=1-PLTo	1.00	1.00		0.11
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	1.00	1.00		1.00
EL1 (refer to Exhibit C16-3)	1.94	2.76		1.45
EL2=Max((1-Ptho**n)/Plto, 1.0)				1.00
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.10	0.10		0.39
gdiff=max(gq-gf,0)	0.00	0.00		0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.50	0.26		0.69
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.500	0.259		0.689

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach			M	
Cycle length, C 60.0 sec				
Total actual green time for LT lane group, G (s)			10.2	
Effective permitted green time for LT lane group, g(s)			10.2	
Opposing effective green time, go (s)			10.2	
Number of lanes in LT lane group, N			1	

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	60.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay		Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
			Unadj. ds	Adj. d1 sec				
Eastbound								
L	0.0	0.00	10.1	3.8	0.00	0.0	0.0	4.0
TR	0.0	0.00	10.1	6.7	0.00	0.0	0.0	9.7
	0.0						0.0	
Westbound								
L	0.0	0.00	10.1	4.9	0.00	0.0	0.0	6.0
TR	0.0	0.00	10.1	4.6	0.00	0.0	0.0	4.8
	0.0						0.0	
Northbound								
	0.0						0.0	
LT	0.0	0.00	24.9	22.6	0.00	0.0	0.0	24.7
R	0.0	0.00	24.9	23.4	0.00	0.0	0.0	31.8
Southbound								
L	0.0	0.00	24.9	21.2	0.00	0.0	0.0	21.6
TR	0.0	0.00	24.9	21.3	0.00	0.0	0.0	21.6
	0.0						0.0	

Intersection Delay 11.5 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 4/15/2008
Period: 7:30 AM-8:30 AM
Project ID: Wooster and Watterson:1 Lane+Close Midas+Close 4 st on Nside
E/W St: US 50

Inter.: Wooster and Watterson
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Watterson

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
LGConfig	L	T			TR					L		R
Volume	30	417			877	104				113		65
Lane Width	12.0	12.0			12.0					12.0		12.0
RTOR Vol						10						7

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left				
Thru	A				Thru				
Right					Right				
Peds					Peds				
WB Left					SB Left	A			
Thru	A				Thru				
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	71.6					9.4			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 91.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	340	432	0.10	0.79	2.4	A		
T	1282	1629	0.36	0.79	3.1	A	3.0	A
Westbound								
TR	1271	1615	0.85	0.79	12.1	B	12.1	B
Northbound								
Southbound								
L	168	1624	0.75	0.10	58.5	E		
							52.3	D
R	150	1454	0.43	0.10	40.2	D		

Intersection Delay = 13.9 (sec/veh) Intersection LOS = B

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru			
Right					Right			
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	71.6				9.4			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 91.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	30	417			877	104				113		65
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Adj flow	33	463			974	104				126		64
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Adj flow	33	463			1078					126		64
Prop LTs	1.000	0.000			0.000							
Prop RTs		0.000		0.096								1.000

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound				Westbound			Northbound			Southbound		
LG	L	T			TR						L		R
So	1900	1900			1900						1900		1900
Lanes	1	1	0	0	1	0	0	0	0	0	1	0	1
fW	1.000	1.000			1.000						1.000		1.000
fHV	1.000	0.952			0.957						1.000		1.000
fG	1.000	1.000			1.000						1.000		1.000
fP	1.000	1.000			1.000						1.000		1.000
fBB	1.000	1.000			1.000						1.000		1.000
fA	0.900	0.900			0.900						0.900		0.900
fLU	1.000	1.000			1.000						1.000		1.000
fRT		1.000			0.987								0.850
fLT	0.253	1.000			1.000						0.950		
Sec.													
fLpb	1.000	1.000			1.000						1.000		
fRpb		1.000			1.000								1.000
S	432	1629			1615						1624		1454
Sec.													

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

R'	0.43	0.10	38.3	1.000	150	0.11	2.0	0.0	40.2	D

Intersection delay = 13.9 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

		EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach		S			
Cycle length, C	91.0 sec				
Total actual green time for LT lane group, G (s)		71.6			
Effective permitted green time for LT lane group, g(s)		71.6			
Opposing effective green time, go (s)		71.6			
Number of lanes in LT lane group, N		1			
Number of lanes in opposing approach, No		1			
Adjusted LT flow rate, VLT (veh/h)		33			
Proportion of LT in LT lane group, PLT		1.000			
Proportion of LT in opposing flow, PLTo		0.00			
Adjusted opposing flow rate, Vo (veh/h)		1078			
Lost time for LT lane group, tL		5.00			
Computation					
LT volume per cycle, LTC=VLTC/3600		0.83			
Opposing lane util. factor, fLUo		1.000	1.000		
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)		27.25			
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g		0.0			
Opposing platoon ratio, Rpo (refer Exhibit 16-11)		1.00			
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]		0.21			
gq, (see Exhibit C16-4,5,6,7,8)		6.90			
gu=g-gq if gq>=gf, or = g-gf if gq<gf		64.70			
n=Max(gq-gf)/2,0)		3.45			
PTHo=1-PLTo		1.00			
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]		1.00			
EL1 (refer to Exhibit C16-3)		3.57			
EL2=Max((1-Ptho**n)/Plto, 1.0)					
fmin=2(1+PL)/g or fmin=2(1+Pl)/g		0.06			
gdiff=max(gq-gf,0)		0.00			
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)		0.25			
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)					
or flt=[fm+0.91(N-1)]/N**					
Left-turn adjustment, fLT		0.253			

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

		EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach					
Cycle length, C	91.0 sec				
Total actual green time for LT lane group, G (s)					
Effective permitted green time for LT lane group, g(s)					
Opposing effective green time, go (s)					
Number of lanes in LT lane group, N					

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	91.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
L	0.0	0.00	9.7	2.2	0.00	0.0	0.0	2.4
T	0.0	0.00	9.7	2.9	0.00	0.0	0.0	3.1
	0.0						0.0	
Westbound								
	0.0						0.0	
TR	0.0	0.00	9.7	6.2	0.00	0.0	0.0	12.1
	0.0						0.0	
Northbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Southbound								
L	0.0	0.00	40.8	39.7	0.00	0.0	0.0	58.5
	0.0						0.0	
R	0.0	0.00	40.8	38.3	0.00	0.0	0.0	40.2

Intersection Delay 13.9 sec/veh Intersection LOS B

BACK OF QUEUE WORKSHEET

HCS+: Signalized Intersections Release 5.2

Analyst: CFD
Agency: Barr & Prevost
Date: 4/15/2008
Period: 4:45 PM-5:45 PM
Project ID: Wooster and Watterson:1 Lane+Close Midas+Close 4 st on Nside
E/W St: US 50

Inter.: Wooster and Watterson
Area Type: CBD or Similar
Jurisd: Fairfax, Ohio
Year : 2008
N/S St: Watterson

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
LGConfig	L	T			TR					L		R
Volume	53	1017			521	96				239		75
Lane Width	12.0	12.0			12.0					12.0		12.0
RTOR Vol						0						7

Duration 1.00 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left				
Thru	A				Thru				
Right					Right				
Peds					Peds				
WB Left					SB Left	A			
Thru	A				Thru				
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	104.5					26.5			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 141.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	466	629	0.13	0.74	5.3	A		
T	1207	1629	0.94	0.74	32.6	C	31.2	C
Westbound								
TR	1131	1526	0.61	0.74	9.5	A	9.5	A
Northbound								
Southbound								
L	305	1624	0.87	0.19	84.3	F		
							76.6	E
R	273	1454	0.28	0.19	49.6	D		

Intersection Delay = 31.5 (sec/veh) Intersection LOS = C

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
EB Thru	A				NB Thru			
EB Right					NB Right			
EB Peds					NB Peds			
WB Left					SB Left	A		
WB Thru	A				SB Thru			
WB Right	A				SB Right	A		
WB Peds					SB Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	104.5				26.5			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 141.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	53	1017			521	96				239		75
PHF	0.90	0.90			0.90	0.90				0.90		0.90
Adj flow	59	1130			579	107				266		76
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Adj flow	59	1130			686					266		76
Prop LTs	1.000	0.000			0.000							
Prop RTs		0.000			0.156							1.000

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound				Westbound			Northbound			Southbound		
LG	L	T			TR						L		R
So	1900	1900			1900						1900		1900
Lanes	1	1	0	0	1	0	0	0	0	0	1	0	1
fW	1.000	1.000			1.000						1.000		1.000
fHV	1.000	0.952			0.960						1.000		1.000
fG	1.000	1.000			0.950						1.000		1.000
fP	1.000	1.000			1.000						1.000		1.000
fBB	1.000	1.000			1.000						1.000		1.000
fA	0.900	0.900			0.900						0.900		0.900
fLU	1.000	1.000			1.000						1.000		1.000
fRT		1.000			0.979								0.850
fLT	0.368	1.000			1.000						0.950		
Sec.													
fLpb	1.000	1.000			1.000						1.000		
fRpb		1.000			1.000								1.000
S	629	1629			1526						1624		1454
Sec.													

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

R	0.28	0.19	49.1	1.000	273	0.11	0.6	0.0	49.6	D

Intersection delay = 31.5 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

		EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach		S			
Cycle length, C	141.0 sec				
Total actual green time for LT lane group, G (s)		104.5			
Effective permitted green time for LT lane group, g(s)		104.5			
Opposing effective green time, go (s)		104.5			
Number of lanes in LT lane group, N		1			
Number of lanes in opposing approach, No		1			
Adjusted LT flow rate, VLT (veh/h)		59			
Proportion of LT in LT lane group, PLT		1.000			
Proportion of LT in opposing flow, PLTo		0.00			
Adjusted opposing flow rate, Vo (veh/h)		686			
Lost time for LT lane group, tL		5.00			
Computation					
LT volume per cycle, LTC=VLTC/3600		2.31			
Opposing lane util. factor, fLUo		1.000	1.000		
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)		26.87			
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g		0.0			
Opposing platoon ratio, Rpo (refer Exhibit 16-11)		1.00			
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]		0.26			
gq, (see Exhibit C16-4,5,6,7,8)		9.47			
gu=g-gq if gq>=gf, or = g-gf if gq<gf		95.03			
n=Max(gq-gf)/2,0)		4.73			
PTHo=1-PLTo		1.00			
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]		1.00			
EL1 (refer to Exhibit C16-3)		2.47			
EL2=Max((1-Ptho**n)/Plto, 1.0)					
fmin=2(1+PL)/g or fmin=2(1+Pl)/g		0.04			
gdiff=max(gq-gf,0)		0.00			
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)		0.37			
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**					
Left-turn adjustment, fLT		0.368			

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

		EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach					
Cycle length, C	141.0 sec				
Total actual green time for LT lane group, G (s)					
Effective permitted green time for LT lane group, g(s)					
Opposing effective green time, go (s)					
Number of lanes in LT lane group, N					

	Eastbound		Westbound	Northbound	Southbound	
LaneGroup	L	T	TR		L	R
Init Queue	0.0	0.0	0.0		0.0	0.0
Flow Rate	59	1130	686		266	76
So	1900	1900	1900		1900	1900
No.Lanes	1	1 0	0 1 0	0 0 0	1 0	1
SL	629	1629	1526		1624	1454
LnCapacity	466	1207	1131		305	273
Flow Ratio	0.1	0.7	0.4		0.2	0.1
v/c Ratio	0.13	0.94	0.61		0.87	0.28
Grn Ratio	0.74	0.74	0.74		0.19	0.19
I Factor		1.000	1.000		1.000	
AT or PVG	3	3	3		3	3
Pltn Ratio	1.00	1.00	1.00		1.00	1.00
PF2	1.00	1.00	1.00		1.00	1.00
Q1	0.7	37.4	12.6		10.1	2.6
kB	0.6	1.0	1.0		0.4	0.4
Q2	0.1	11.4	1.5		2.7	0.2
Q Average	0.7	48.9	14.1		12.8	2.7
Q Spacing	25.0	25.0	25.0		25.0	25.0
Q Storage	0	0	0		0	0
Q S Ratio						
70th Percentile Output:						
fB%	1.2	1.1	1.2		1.2	1.2
BOQ	0.9	55.2	16.5		15.0	3.2
QSRatio						
85th Percentile Output:						
fB%	1.6	1.4	1.5		1.5	1.6
BOQ	1.2	66.4	21.0		19.1	4.3
QSRatio						
90th Percentile Output:						
fB%	1.8	1.4	1.6		1.6	1.7
BOQ	1.3	70.1	22.6		20.6	4.7
QSRatio						
95th Percentile Output:						
fB%	2.1	1.5	1.8		1.8	2.0
BOQ	1.5	75.2	25.1		22.9	5.5
QSRatio						
98th Percentile Output:						
fB%	2.6	1.7	2.0		2.1	2.5
BOQ	2.0	84.2	28.8		26.5	6.8
QSRatio						

ERROR MESSAGES

No errors to report.

OCCbicg
OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	141.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
L	0.0	0.00	18.3	5.2	0.00	0.0	0.0	5.3
T	0.0	0.00	18.3	15.4	0.00	0.0	0.0	32.6
	0.0						0.0	
Westbound								
	0.0						0.0	
TR	0.0	0.00	18.3	8.6	0.00	0.0	0.0	9.5
	0.0						0.0	
Northbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Southbound								
L	0.0	0.00	57.3	55.6	0.00	0.0	0.0	84.3
	0.0						0.0	
R	0.0	0.00	57.3	49.1	0.00	0.0	0.0	49.6

Intersection Delay 31.5 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left	L	59	629		0.09	0.74	466	0.13
Prot								
Perm								
Thru	T	1130	1629	#	0.69	0.74	1207	0.94
Right								
Westbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	TR	686	1526		0.45	0.74	1131	0.61
Right								
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru								
Right								
Southbound								
Prot								
Perm								
Left	L	266	1624	#	0.16	0.19	305	0.87
Prot								
Perm								
Thru								
Right	R	76	1454		0.05	0.19	273	0.28

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.86
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.92

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.13	0.74	5.2	1.000	466	0.11	0.1	0.0	5.3	A		
T	0.94	0.74	15.4	1.000	1207	0.45	17.1	0.0	32.6	C	31.2	C
Westbound												
TR	0.61	0.74	8.6	1.000	1131	0.19	0.9	0.0	9.5	A	9.5	A
Northbound												
Southbound												
L	0.87	0.19	55.6	1.000	305	0.40	28.7	0.0	84.3	F		
											76.6	E

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	4/15/2008
Analysis Time Period:	4:45 PM-5:45 PM
Intersection:	Wooster and Watterson
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Wooster and Watterson:1 Lane+Close Midas+Close 4 st on Nside
E/W St: US 50 N/S St: Watterson

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	53	1017			521	96				239		75
% Heavy Veh	0	5			5	0				0		0
PHF	0.90	0.90			0.90	0.90				0.90		0.90
PK 15 Vol	15	283			145	27				66		21
Hi Ln Vol												
% Grade		0			10						0	
Ideal Sat	1900	1900			1900					1900		1900
ParkExist												
NumPark												
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
LGConfig	L	T			TR					L		R
Lane Width	12.0	12.0			12.0					12.0		12.0
RTOR Vol						0						7
Adj Flow	59	1130			686					266		76
%InSharedLn												
Prop LTs	1.000	0.000			0.000							
Prop RTs		0.000			0.156							1.000
Peds Bikes				3			0			0		
Buses	0	0			0					0		0
%InProtPhase												

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0			0.0					0.0		0.0
Arriv. Type	3	3			3					3		3
Unit Ext.	3.0	3.0			3.0					3.0		3.0
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0			2.0					2.0		2.0
Ext of g	2.0	2.0			2.0					2.0		2.0
Ped Min g					3.2			3.2			3.2	

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup	L	T		TR						L	R	
Init Queue	0.0	0.0		0.0						0.0	0.0	
Flow Rate	33	463		1078						126	64	
So	1900	1900		1900						1900	1900	
No.Lanes	1	1	0	0	1	0	0	0	0	1	0	1
SL	432	1629		1615						1624	1454	
LnCapacity	340	1282		1271						168	150	
Flow Ratio	0.1	0.3		0.7						0.1	0.0	
v/c Ratio	0.10	0.36		0.85						0.75	0.43	
Grn Ratio	0.79	0.79		0.79						0.10	0.10	
I Factor		1.000		1.000							1.000	
AT or PVG	3	3		3						3	3	
Pltn Ratio	1.00	1.00		1.00						1.00	1.00	
PF2	1.00	1.00		1.00						1.00	1.00	
Q1	0.2	3.5		17.5						3.1	1.5	
kB	0.4	0.8		0.8						0.2	0.2	
Q2	0.0	0.5		4.3						0.7	0.2	
Q Average	0.2	3.9		21.8						3.8	1.7	
Q Spacing	25.0	25.0		25.0						25.0	25.0	
Q Storage	0	0		0						0	0	
Q S Ratio												
70th Percentile Output:												
fB%	1.2	1.2		1.2						1.2	1.2	
BOQ	0.3	4.7		25.2						4.5	2.0	
QSRatio												
85th Percentile Output:												
fB%	1.6	1.6		1.4						1.6	1.6	
BOQ	0.4	6.2		31.4						5.9	2.7	
QSRatio												
90th Percentile Output:												
fB%	1.8	1.7		1.5						1.7	1.8	
BOQ	0.4	6.8		33.4						6.6	3.0	
QSRatio												
95th Percentile Output:												
fB%	2.1	2.0		1.7						2.0	2.0	
BOQ	0.5	7.8		36.5						7.5	3.4	
QSRatio												
98th Percentile Output:												
fB%	2.7	2.4		1.9						2.4	2.6	
BOQ	0.6	9.6		41.1						9.3	4.3	
QSRatio												

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No
Adjusted LT flow rate, VLT (veh/h)
Proportion of LT in LT lane group, PLT 0.000 0.000
Proportion of LT in opposing flow, PLTo
Adjusted opposing flow rate, Vo (veh/h)
Lost time for LT lane group, tL
Computation
LT volume per cycle, LTC=VLTC/3600
Opposing lane util. factor, fLUo 1.000 1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g
Opposing platoon ratio, Rpo (refer Exhibit 16-11)
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]
gq, (see Exhibit C16-4,5,6,7,8)
gu=g-gq if gq>=gf, or = g-gf if gq<gf
n=Max(gq-gf)/2,0)
PTHo=1-PLTo
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]
EL1 (refer to Exhibit C16-3)
EL2=Max((1-Ptho**n)/Plto, 1.0)
fmin=2(1+PL)/g or fmin=2(1+Pl)/g
gdiff=max(gq-gf,0)
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)
or flt=[fm+0.91(N-1)]/N**
Left-turn adjustment, fLT

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				

Permitted Right Turns

Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left	L	33	432		0.08	0.79	340	0.10
Prot								
Perm								
Thru	T	463	1629		0.28	0.79	1282	0.36
Right								
Westbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	TR	1078	1615	#	0.67	0.79	1271	0.85
Right								
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru								
Right								
Southbound								
Prot								
Perm								
Left	L	126	1624	#	0.08	0.10	168	0.75
Prot								
Perm								
Thru								
Right	R	64	1454		0.04	0.10	150	0.43

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.75
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.84

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Del d2	Res Del d3	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound												
L	0.10	0.79	2.2	1.000	340	0.11	0.1	0.0	2.4	A		
T	0.36	0.79	2.9	1.000	1282	0.11	0.2	0.0	3.1	A	3.0	A
Westbound												
TR	0.85	0.79	6.2	1.000	1271	0.38	5.9	0.0	12.1	B	12.1	B
Northbound												
Southbound												
L	0.75	0.10	39.7	1.000	168	0.31	18.8	0.0	58.5	E		
											52.3	D

Phone:
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	4/15/2008
Analysis Time Period:	7:30 AM-8:30 AM
Intersection:	Wooster and Watterson
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Wooster and Watterson:1 Lane+Close Midas+Close 4 st on Nside
E/W St: US 50 N/S St: Watterson

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	30	417			877	104				113		65
% Heavy Veh	0	5			5	0				0		0
PHF	0.90	0.90			0.90	0.90				0.90		0.90
PK 15 Vol	8	116			244	29				31		18
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900			1900					1900		1900
ParkExist												
NumPark												
No. Lanes	1	1	0	0	1	0	0	0	0	1	0	1
LGConfig	L	T			TR					L		R
Lane Width	12.0	12.0			12.0					12.0		12.0
RTOR Vol						10						7
Adj Flow	33	463			1078					126		64
%InSharedLn												
Prop LTs	1.000	0.000			0.000							
Prop RTs		0.000		0.096								1.000
Peds Bikes				1			0			0		
Buses	0	0			0					0		0
%InProtPhase												

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0			0.0					0.0		0.0
Arriv. Type	3	3			3					3		3
Unit Ext.	3.0	3.0			3.0					3.0		3.0
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0			2.0					2.0		2.0
Ext of g	2.0	2.0			2.0					2.0		2.0
Ped Min g					3.2			3.2			3.2	

	Eastbound			Westbound			Northbound		Southbound		
LaneGroup	L	TR		L	TR		LT	R	L	TR	
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	
Flow Rate	97	804		133	423		106	171	31	43	
So	1900	1900		1900	1900		1900	1900	1900	1900	
No.Lanes	1	1	0	1	1	0	1	1	1	1	0
SL	845	1620		443	1624		1230	1454	1177	1519	
LnCapacity	561	1075		294	1077		209	247	200	258	
Flow Ratio	0.1	0.5		0.3	0.3		0.1	0.1	0.0	0.0	
v/c Ratio	0.17	0.75		0.45	0.39		0.51	0.69	0.16	0.17	
Grn Ratio	0.66	0.66		0.66	0.66		0.17	0.17	0.17	0.17	
I Factor		1.000			1.000		1.000			1.000	
AT or PVG	3	3		3	3		3	3	3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	
Q1	0.6	9.0		1.1	3.2		1.6	2.7	0.4	0.6	
kB	0.4	0.6		0.3	0.6		0.2	0.2	0.2	0.2	
Q2	0.1	1.7		0.2	0.4		0.2	0.5	0.0	0.0	
Q Average	0.7	10.6		1.3	3.6		1.8	3.2	0.5	0.7	
Q Spacing	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	
Q Storage	0	0		0	0		0	0	0	0	
Q S Ratio											
70th Percentile Output:											
fB%	1.2	1.2		1.2	1.2		1.2	1.2	1.2	1.2	
BOQ	0.8	12.5		1.5	4.3		2.2	3.8	0.6	0.8	
QSRatio											
85th Percentile Output:											
fB%	1.6	1.5		1.6	1.6		1.6	1.6	1.6	1.6	
BOQ	1.1	16.0		2.0	5.6		2.9	5.0	0.8	1.1	
QSRatio											
90th Percentile Output:											
fB%	1.8	1.6		1.8	1.7		1.8	1.7	1.8	1.8	
BOQ	1.2	17.3		2.3	6.2		3.2	5.6	0.9	1.2	
QSRatio											
95th Percentile Output:											
fB%	2.1	1.8		2.1	2.0		2.0	2.0	2.1	2.1	
BOQ	1.4	19.4		2.6	7.1		3.7	6.4	1.0	1.4	
QSRatio											
98th Percentile Output:											
fB%	2.6	2.1		2.6	2.5		2.6	2.5	2.7	2.7	
BOQ	1.8	22.7		3.3	8.8		4.7	7.9	1.3	1.7	
QSRatio											

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No			1	
Adjusted LT flow rate, VLT (veh/h)			94	
Proportion of LT in LT lane group, PLT	0.000	0.000	0.887	0.000
Proportion of LT in opposing flow, PLTo			0.00	
Adjusted opposing flow rate, Vo (veh/h)			43	
Lost time for LT lane group, tL			5.00	
Computation				
LT volume per cycle, LTC=VLTC/3600			1.57	
Opposing lane util. factor, fLUo	1.000	1.000	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)			0.72	
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g			0.0	
Opposing platoon ratio, Rpo (refer Exhibit 16-11)			1.00	
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]			0.83	
gq, (see Exhibit C16-4,5,6,7,8)			0.00	
gu=g-gq if gq>=gf, or = g-gf if gq<gf			10.20	
n=Max(gq-gf)/2,0)			0.00	
PTHo=1-PLTo			1.00	
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]			0.89	
EL1 (refer to Exhibit C16-3)			1.44	
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g			0.37	
gdiff=max(gq-gf,0)			0.00	
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)			0.72	
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT			0.719	

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	Lane Group Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left	L	97	845		0.11	0.66	561	0.17
Prot								
Perm								
Thru	TR	804	1620	#	0.50	0.66	1075	0.75
Right								
Westbound								
Prot								
Perm								
Left	L	133	443		0.30	0.66	294	0.45
Prot								
Perm								
Thru	TR	423	1624		0.26	0.66	1077	0.39
Right								
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LT	106	1230		0.09	0.17	209	0.51
Right	R	171	1454	#	0.12	0.17	247	0.69
Southbound								
Prot								
Perm								
Left	L	31	1177		0.03	0.17	200	0.16
Prot								
Perm								
Thru	TR	43	1519		0.03	0.17	258	0.17
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.61
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.74

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.17	0.66	3.8	1.000	561	0.11	0.1	0.0	4.0	A		
TR	0.75	0.66	6.7	1.000	1075	0.30	3.0	0.0	9.7	A	9.1	A
Westbound												
L	0.45	0.66	4.9	1.000	294	0.11	1.1	0.0	6.0	A		
TR	0.39	0.66	4.6	1.000	1077	0.11	0.2	0.0	4.8	A	5.1	A
Northbound												
LT	0.51	0.17	22.6	1.000	209	0.12	2.0	0.0	24.7	C	29.1	C
R	0.69	0.17	23.4	1.000	247	0.26	8.4	0.0	31.8	C		
Southbound												
L	0.16	0.17	21.2	1.000	200	0.11	0.4	0.0	21.6	C		
TR	0.17	0.17	21.3	1.000	258	0.11	0.3	0.0	21.6	C	21.6	C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	4/15/2008
Analysis Time Period:	4:45 PM-5:45 PM
Intersection:	US 50 and Meadowlark
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Meadowlark PM: 1 lane Dragon Way is open
E/W St: US 50 N/S St: Meadowlark/Wooster Pike

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	87	686	38	120	370	11	85	11	171	28	10	29
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	24	191	11	33	103	3	24	3	48	8	3	8
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	1	1	0	1	1	0	0	1	1	1	1	0
LGConfig	L	TR		L	TR			LT	R	L	TR	
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0	12.0	12.0	
RTOR Vol			0			0			17			0
Adj Flow	97	804		133	423			106	171	31	43	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000			0.887		1.000	0.000	
Prop RTs		0.052			0.028			0.000	1.000		0.744	
Peds Bikes		12			1			0			0	
Buses	3	0		0	0			0	0	0	0	
%InProtPhase												

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Arriv. Type	3	3		3	3			3	3	3	3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Ext of g	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Ped Min g		3.3			3.2			3.2			3.2	

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup	L	TR		L	TR		L	TR		L	TR	
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	12	376		101	857		31	218		23	52	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	1	1	0	1	1	0	1	1	0	1	1	0
SL	377	1589		896	1614		1236	1472		855	1542	
LnCapacity	249	1048		591	1064		242	288		167	302	
Flow Ratio	0.0	0.2		0.1	0.5		0.0	0.1		0.0	0.0	
v/c Ratio	0.05	0.36		0.17	0.81		0.13	0.76		0.14	0.17	
Grn Ratio	0.66	0.66		0.66	0.66		0.20	0.20		0.20	0.20	
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	0.1	3.2		0.7	11.9		0.5	3.9		0.4	0.8	
kB	0.3	0.6		0.4	0.6		0.3	0.3		0.2	0.3	
Q2	0.0	0.3		0.1	2.5		0.0	0.8		0.0	0.1	
Q Average	0.1	3.6		0.8	14.4		0.5	4.8		0.4	0.9	
Q Spacing	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Q Storage	0	0		0	0		0	0		0	0	
Q S Ratio												
70th Percentile Output:												
fB%	1.2	1.2		1.2	1.2		1.2	1.2		1.2	1.2	
BOQ	0.1	4.2		1.0	16.8		0.6	5.7		0.5	1.1	
QSRatio												
85th Percentile Output:												
fB%	1.6	1.6		1.6	1.5		1.6	1.6		1.6	1.6	
BOQ	0.2	5.6		1.3	21.4		0.8	7.5		0.6	1.4	
QSRatio												
90th Percentile Output:												
fB%	1.8	1.7		1.8	1.6		1.8	1.7		1.8	1.8	
BOQ	0.2	6.2		1.5	23.0		0.9	8.2		0.7	1.6	
QSRatio												
95th Percentile Output:												
fB%	2.1	2.0		2.1	1.8		2.1	2.0		2.1	2.1	
BOQ	0.2	7.1		1.7	25.5		1.1	9.4		0.8	1.8	
QSRatio												
98th Percentile Output:												
fB%	2.7	2.5		2.6	2.0		2.7	2.4		2.7	2.6	
BOQ	0.3	8.7		2.2	29.2		1.4	11.5		1.1	2.3	
QSRatio												

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT	0.000	0.000	0.000	0.000
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	1.000	1.000	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				13.5
Conflicting pedestrian volume, Vped (p/h)				0
Pedestrian flow rate, Vpedg (p/h)				0
OCCpedg				0.000
Opposing queue clearing green, gq (s)				2.65
Eff. ped. green consumed by opp. veh. queue, gq/gp				0.196
OCCpedu				0.000
Opposing flow rate, Vo (veh/h)				218
OCCr				0.000
Number of cross-street receiving lanes, Nrec				1
Number of turning lanes, Nturn				1
ApbT				1.000
Proportion of left turns, PLT				1.000
Proportion of left turns using protected phase, PLTA				0.000
Left-turn adjustment, fLpb				1.000

Permitted Right Turns		
Effective pedestrian green time, gp (s)	13.5	
Conflicting pedestrian volume, Vped (p/h)	0	
Conflicting bicycle volume, Vbic (bicycles/h)	0	
Vpedg	0	
OCCpedg	0.000	
Effective green, g (s)	13.5	
Vbicg	0	

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left	L	12	377		0.03	0.66	249	0.05
Prot								
Perm								
Thru	TR	376	1589		0.24	0.66	1048	0.36
Right								
Westbound								
Prot								
Perm								
Left	L	101	896		0.11	0.66	591	0.17
Prot								
Perm								
Thru	TR	857	1614	#	0.53	0.66	1064	0.81
Right								
Northbound								
Prot								
Perm								
Left	L	31	1236		0.03	0.20	242	0.13
Prot								
Perm								
Thru	TR	218	1472	#	0.15	0.20	288	0.76
Right								
Southbound								
Prot								
Perm								
Left	L	23	855		0.03	0.20	167	0.14
Prot								
Perm								
Thru	TR	52	1542		0.03	0.20	302	0.17
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.68
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.79

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.05	0.66	4.1	1.000	249	0.11	0.1	0.0	4.2	A		
TR	0.36	0.66	5.2	1.000	1048	0.11	0.2	0.0	5.5	A	5.4	A
Westbound												
L	0.17	0.66	4.5	1.000	591	0.11	0.1	0.0	4.6	A		
TR	0.81	0.66	8.5	1.000	1064	0.35	4.8	0.0	13.3	B	12.4	B
Northbound												
L	0.13	0.20	22.9	1.000	242	0.11	0.2	0.0	23.1	C		
TR	0.76	0.20	26.2	1.000	288	0.31	11.8	0.0	38.0	D	36.1	D
Southbound												
L	0.14	0.20	22.9	1.000	167	0.11	0.4	0.0	23.3	C		
TR	0.17	0.20	23.1	1.000	302	0.11	0.3	0.0	23.4	C	23.4	C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	4/15/2008
Analysis Time Period:	7:30 AM-8:30 AM
Intersection:	US 50 and Meadowlark
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Meadowlark AM: 1 lane+Dragon Way Open
E/W St: US 50 N/S St: Meadowlark/Wooster Pike

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	11	285	59	91	765	11	28	14	202	21	16	35
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	3	79	16	25	213	3	8	4	56	6	4	10
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
LGConfig	L	TR		L	TR		L	TR		L	TR	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol			6			5			20			4
Adj Flow	12	376		101	857		31	218		23	52	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs	0.157			0.008			0.927			0.654		
Peds Bikes	1			0			0		0	0		
Buses	0	2		0	2		0	0		0	0	
%InProtPhase												

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2			3.2	

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR	LTR	LTR	LTR
Init Queue	0.0	0.0	0.0	0.0
Flow Rate	619	342	6	307
So	1900	1900	1900	1900
No.Lanes	0 2 0	0 2 0	0 1 0	0 1 0
SL	1478	1535	1479	1282
LnCapacity	739	767	493	427
Flow Ratio	0.4	0.2	0.0	0.2
v/c Ratio	0.84	0.45	0.01	0.72
Grn Ratio	0.50	0.50	0.33	0.33
I Factor	1.000	1.000	1.000	1.000
AT or PVG	3	3	3	3
Pltn Ratio	1.00	1.00	1.00	1.00
PF2	1.00	1.00	1.00	1.00
Q1	8.9	3.7	0.1	4.5
kB	0.7	0.7	0.5	0.5
Q2	3.4	0.6	0.0	1.2
Q Average	12.3	4.2	0.1	5.7
Q Spacing	25.0	25.0	25.0	25.0
Q Storage	0	0	0	0
Q S Ratio				
70th Percentile Output:				
fB%	1.2	1.2	1.3	1.2
BOQ	14.8	5.3	0.1	7.0
QSRatio				
85th Percentile Output:				
fB%	1.4	1.5	1.7	1.5
BOQ	17.5	6.5	0.1	8.5
QSRatio				
90th Percentile Output:				
fB%	1.5	1.7	2.0	1.7
BOQ	18.9	7.3	0.1	9.4
QSRatio				
95th Percentile Output:				
fB%	1.7	2.0	2.6	1.9
BOQ	20.7	8.6	0.2	10.9
QSRatio				
98th Percentile Output:				
fB%	1.8	2.3	3.2	2.2
BOQ	22.4	9.9	0.2	12.4
QSRatio				

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No	2	2	1	1
Adjusted LT flow rate, VLT (veh/h)	46	1	3	232
Proportion of LT in LT lane group, PLT	0.039	0.002	0.500	0.756
Proportion of LT in opposing flow, PLTo	0.00	0.04	0.76	0.50
Adjusted opposing flow rate, Vo (veh/h)	653	1179	307	6
Lost time for LT lane group, tL	5.00	5.00	5.00	5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	0.77	0.02	0.05	3.87
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	5.72	10.32	5.12	0.10
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	9.5	23.6	12.6	0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00	1.00	1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.50	0.50	0.67	0.67
gq, (see Exhibit C16-4,5,6,7,8)	2.06	10.73	6.15	0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf	20.53	6.37	7.45	20.00
n=Max(gq-gf)/2,0)	0.00	0.00	0.00	0.00
PTHo=1-PLTo	1.00	0.96	0.24	0.50
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	0.09	0.00	0.50	0.76
EL1 (refer to Exhibit C16-3)	2.76	4.68	1.90	1.38
EL2=Max((1-Ptho**n)/Plto, 1.0)	1.00	1.00	1.00	1.00
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.07	0.07	0.15	0.18
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.90	1.00	0.88	0.78
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00) or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.906	0.954	0.885	0.775

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LTR	1179	2815	#	0.42	0.50	1408	0.84
Right								
Westbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LTR	653	2924		0.22	0.50	1462	0.45
Right								
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LTR	6	1479		0.00	0.33	493	0.01
Right								
Southbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LTR	307	1282	#	0.24	0.33	427	0.72
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.66
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.79

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.84	0.50	12.9	1.000	1408	0.50	6.4	0.0	19.3	B	19.3	B
Westbound												
LTR	0.45	0.50	9.7	1.000	1462	0.50	1.0	0.0	10.6	B	10.6	B
Northbound												
LTR	0.01	0.33	13.4	1.000	493	0.50	0.0	0.0	13.4	B	13.4	B
Southbound												
LTR	0.72	0.33	17.5	1.000	427	0.50	10.6	0.0	28.1	C	28.1	C

Phone:
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	3/18/2008
Analysis Time Period:	4:45 PM-5:45 PM
Intersection:	Wooster and Watterson
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Wooster and Watterson Existing
E/W St: US 50 N/S St: Watterson

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	41	1017	3	1	521	76	3	2	1	209	0	67
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.89
PK 15 Vol	11	283	1	1	145	21	1	1	1	58	0	19
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900			1900			1900	
ParkExist												
NumPark												
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			10			0			0
Adj Flow		1179			653			6			307	
%InSharedLn												
Prop LTs		0.039			0.002			0.500			0.756	
Prop RTs		0.003			0.112			0.167			0.244	
Peds Bikes		3			3			1			0	
Buses		0			0			0			0	
%InProtPhase												
Duration	1.00			Area Type: CBD or Similar								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0			0.0			0.0	
Arriv. Type		3			3			3			3	
Unit Ext.		3.0			3.0			3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0			2.0			2.0	
Ext of g		2.0			2.0			2.0			2.0	
Ped Min g		3.2			3.2			3.2			3.2	

	Eastbound	Westbound	Northbound	Southbound
LaneGroup	LTR	LTR	LTR	LTR
Init Queue	0.0	0.0	0.0	0.0
Flow Rate	259	562	5	158
So	1900	1900	1900	1900
No.Lanes	0 2 0	0 2 0	0 1 0	0 1 0
SL	1417	1540	1507	1314
LnCapacity	803	872	402	350
Flow Ratio	0.2	0.4	0.0	0.1
v/c Ratio	0.32	0.64	0.01	0.45
Grn Ratio	0.57	0.57	0.27	0.27
I Factor	1.000	1.000	1.000	1.000
AT or PVG	3	3	3	3
Pltn Ratio	1.00	1.00	1.00	1.00
PF2	1.00	1.00	1.00	1.00
Q1	2.3	6.4	0.1	2.2
kB	0.7	0.8	0.5	0.4
Q2	0.4	1.4	0.0	0.3
Q Average	2.6	7.8	0.1	2.5
Q Spacing	25.0	25.0	25.0	25.0
Q Storage	0	0	0	0
Q S Ratio				
70th Percentile Output:				
fB%	1.3	1.2	1.3	1.3
BOQ	3.3	9.5	0.1	3.2
QSRatio				
85th Percentile Output:				
fB%	1.6	1.5	1.7	1.6
BOQ	4.2	11.4	0.1	4.0
QSRatio				
90th Percentile Output:				
fB%	1.8	1.6	2.0	1.8
BOQ	4.7	12.5	0.1	4.6
QSRatio				
95th Percentile Output:				
fB%	2.2	1.8	2.6	2.2
BOQ	5.8	14.1	0.2	5.6
QSRatio				
98th Percentile Output:				
fB%	2.6	2.0	3.2	2.6
BOQ	6.8	15.7	0.2	6.6
QSRatio				

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No	2	2	1	1
Adjusted LT flow rate, VLT (veh/h)	29	1	3	98
Proportion of LT in LT lane group, PLT	0.059	0.001	0.600	0.620
Proportion of LT in opposing flow, PLTo	0.00	0.06	0.62	0.60
Adjusted opposing flow rate, Vo (veh/h)	1071	495	158	5
Lost time for LT lane group, tL	5.00	5.00	5.00	5.00
Computation				
LT volume per cycle, LTC=VLTC/3600	0.48	0.02	0.05	1.63
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	9.38	4.33	2.63	0.08
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g	15.1	27.4	9.0	0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00	1.00	1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.43	0.43	0.73	0.73
gq, (see Exhibit C16-4,5,6,7,8)	6.82	0.00	2.44	0.00
gu=g-gq if gq>=gf, or = g-gf if gq<gf	18.86	6.56	6.96	16.00
n=Max(gq-gf)/2,0)	0.00	0.00	0.00	0.00
PTHo=1-PLTo	1.00	0.94	0.38	0.40
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	0.14	0.00	0.60	0.62
EL1 (refer to Exhibit C16-3)	4.20	2.35	1.63	1.38
EL2=Max((1-Ptho**n)/Plto, 1.0)	1.00	1.00	1.00	1.00
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.07	0.06	0.20	0.20
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.83	1.00	0.88	0.81
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.868	0.955	0.881	0.808

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	495	2698	0.18	0.57	1529	0.32
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	1071	2933	# 0.37	0.57	1662	0.64
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	5	1507	0.00	0.27	402	0.01
Right							
Southbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LTR	158	1314	# 0.12	0.27	350	0.45
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.49
Total lost time per cycle, L = 10.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.58

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.32	0.57	6.9	1.000	1529	0.50	0.6	0.0	7.5	A	7.5	A
Westbound												
LTR	0.64	0.57	8.9	1.000	1662	0.50	2.0	0.0	10.8	B	10.8	B
Northbound												
LTR	0.01	0.27	16.2	1.000	402	0.50	0.1	0.0	16.2	B	16.2	B
Southbound												
LTR	0.45	0.27	18.3	1.000	350	0.50	4.2	0.0	22.6	C	22.6	C

Phone:
E-Mail:
Fax:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	3/18/2008
Analysis Time Period:	7:30 AM-8:30 AM
Intersection:	Wooster and Watterson
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: Wooster and Watterson Existing
E/W St: US 50 N/S St: Watterson

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	26	417	3	1	877	96	3	2	0	88	2	52
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	7	116	1	1	244	27	1	1	0	24	1	14
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900			1900			1900	
ParkExist												
NumPark												
No. Lanes	0	2	0	0	2	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			10			0			0
Adj Flow		495			1071			5			158	
%InSharedLn												
Prop LTs		0.059			0.001			0.600			0.620	
Prop RTs		0.006			0.090			0.000			0.367	
Peds Bikes		0			1			0			0	
Buses		0			0			0			0	
%InProtPhase												

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0			0.0			0.0	
Arriv. Type		3			3			3			3	
Unit Ext.		3.0			3.0			3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0			2.0			2.0	
Ext of g		2.0			2.0			2.0			2.0	
Ped Min g		3.2			3.2			3.2			3.2	

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup	L	TR		L	TR		LT	R		L	TR	
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	97	422		133	222		106	123		31	43	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	1	2	0	1	2	0	0 1	1		1	1	0
SL	928	1619		680	1623		1230	1454		1177	1519	
LnCapacity	578	665		424	667		328	388		314	405	
Flow Ratio	0.1	0.3		0.2	0.1		0.1	0.1		0.0	0.0	
v/c Ratio	0.17	0.63		0.31	0.33		0.32	0.32		0.10	0.11	
Grn Ratio	0.62	0.41		0.62	0.41		0.27	0.27		0.27	0.27	
I Factor		1.000			1.000		1.000				1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	0.9	8.4		1.3	3.8		2.1	2.5		0.6	0.8	
kB	0.8	0.9		0.6	0.9		0.5	0.6		0.5	0.6	
Q2	0.2	1.5		0.3	0.4		0.2	0.3		0.1	0.1	
Q Average	1.1	9.9		1.6	4.2		2.4	2.7		0.6	0.9	
Q Spacing	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Q Storage	0	0		0	0		0	0		0	0	
Q S Ratio												
70th Percentile Output:												
fB%	1.3	1.2		1.3	1.2		1.3	1.3		1.3	1.3	
BOQ	1.4	12.0		2.0	5.2		3.0	3.4		0.8	1.1	
QSRatio												
85th Percentile Output:												
fB%	1.6	1.4		1.6	1.5		1.6	1.6		1.7	1.7	
BOQ	1.8	14.2		2.6	6.4		3.8	4.3		1.1	1.5	
QSRatio												
90th Percentile Output:												
fB%	1.9	1.6		1.9	1.7		1.8	1.8		1.9	1.9	
BOQ	2.1	15.5		3.0	7.2		4.3	4.9		1.2	1.7	
QSRatio												
95th Percentile Output:												
fB%	2.4	1.7		2.3	2.0		2.2	2.2		2.5	2.4	
BOQ	2.6	17.2		3.7	8.6		5.3	6.0		1.6	2.2	
QSRatio												
98th Percentile Output:												
fB%	2.9	1.9		2.8	2.3		2.6	2.6		3.0	3.0	
BOQ	3.2	18.8		4.5	9.9		6.3	7.0		1.9	2.6	
QSRatio												

ERROR MESSAGES

No errors to report.

Adjusted LT flow rate, VLT (veh/h)			1	
Proportion of LT in LT lane group, PLT	0.000	0.000	94	0.000
Proportion of LT in opposing flow, PLTo			0.00	
Adjusted opposing flow rate, Vo (veh/h)			43	
Lost time for LT lane group, tL			5.00	
Computation				
LT volume per cycle, LTC=VLTC/3600			2.35	
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)			1.08	
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g			0.0	
Opposing platoon ratio, Rpo (refer Exhibit 16-11)			1.00	
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]			0.73	
gq, (see Exhibit C16-4,5,6,7,8)			0.00	
gu=g-gq if gq>=gf, or = g-gf if gq<gf			24.00	
n=Max(gq-gf)/2,0)			0.00	
PTHo=1-PLTo			1.00	
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]			0.89	
EL1 (refer to Exhibit C16-3)			1.44	
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g			0.16	
gdiff=max(gq-gf,0)			0.00	
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)			0.72	
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT			0.719	

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				24.0
Conflicting pedestrian volume, Vped (p/h)				0
Pedestrian flow rate, Vpedg (p/h)				0
OCCpedg				0.000
Opposing queue clearing green, gq (s)				0.00
Eff. ped. green consumed by opp. veh. queue, gq/gp				0.000
OCCpedu				0.000
Opposing flow rate, Vo (veh/h)				106
OCCr				0.000
Number of cross-street receiving lanes, Nrec				2
Number of turning lanes, Nturn				1
ApbT				1.000
Proportion of left turns, PLT				1.000
Proportion of left turns using protected phase, PLTA				0.000
Left-turn adjustment, fLpb				1.000

Permitted Right Turns

Effective pedestrian green time, gp (s)			24.0	
Conflicting pedestrian volume, Vped (p/h)			0	
Conflicting bicycle volume, Vbic (bicycles/h)			0	
Vpedg			0	
OCCpedg			0.000	
Effective green, g (s)			24.0	
Vbicg			0	

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot		97	1605		0.06	0.156	250	0.39
Perm		0	702		0.00	0.467	328	0.00
Left	L	97				0.62	578	0.17
Prot								
Perm								
Thru	TR	804	3084	#	0.26	0.41	1268	0.63
Right								
Westbound								
Prot		133	1624	#	0.08	0.156	253	0.53
Perm		0	366		0.00	0.467	171	0.00
Left	L	133				0.62	424	0.31
Prot								
Perm								
Thru	TR	423	3092		0.14	0.41	1271	0.33
Right								
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	LT	106	1230	#	0.09	0.27	328	0.32
Right	R	123	1454		0.08	0.27	388	0.32
Southbound								
Prot								
Perm								
Left	L	31	1177		0.03	0.27	314	0.10
Prot								
Perm								
Thru	TR	43	1519		0.03	0.27	405	0.11
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.43
Total lost time per cycle, L = 15.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.51

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.17	0.62	7.2	1.000	578	0.50	0.6	0.0	7.8	A		
TR	0.63	0.41	21.1	1.000	1268	0.50	2.5	0.0	23.6	C	21.9	C
Westbound												
L	0.31	0.62	8.9	1.000	424	0.50	1.9	0.0	10.8	B		
TR	0.33	0.41	18.1	1.000	1271	0.50	0.7	0.0	18.8	B	16.9	B
Northbound												
LT	0.32	0.27	26.5	1.000	328	0.50	2.6	0.0	29.1	C	28.8	C
R	0.32	0.27	26.4	1.000	388	0.50	2.1	0.0	28.6	C		
Southbound												
L	0.10	0.27	24.9	1.000	314	0.50	0.6	0.0	25.5	C		
TR	0.11	0.27	24.9	1.000	405	0.50	0.5	0.0	25.4	C	25.5	C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	3/18/2008
Analysis Time Period:	4:45 PM-5:45 PM
Intersection:	US 50 and Meadowlark
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: PM Existing Conditions
E/W St: US 50 N/S St: Meadowlark/Wooster Pike

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	87	686	38	120	370	11	85	11	171	28	10	29
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	24	191	11	33	103	3	24	3	48	8	3	8
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	1	2	0	1	2	0	0	1	1	1	1	0
LGConfig	L	TR		L	TR			LT	R	L	TR	
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0	12.0	12.0	
RTOR Vol			0			0			60			0
Adj Flow	97	804		133	423			106	123	31	43	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000			0.887		1.000	0.000	
Prop RTs		0.052			0.028			0.000	1.000		0.744	
Peds Bikes		12			1			0	0		0	
Buses	3	0		0	0			0	0	0	0	
%InProtPhase	0.0			0.0								

Duration 1.00 Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Arriv. Type	3	3		3	3			3	3	3	3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Ext of g	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Ped Min g		3.3			3.2			3.2			3.2	

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup	L	TR		L	TR		L	TR		L	TR	
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	12	189		101	450		31	129		23	46	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	1	2	0	1	2	0	1	1	0	1	1	0
SL	690	1601		1018	1620		1243	1485		1149	1554	
LnCapacity	429	658		634	666		331	396		306	414	
Flow Ratio	0.0	0.1		0.1	0.3		0.0	0.1		0.0	0.0	
v/c Ratio	0.03	0.29		0.16	0.68		0.09	0.33		0.08	0.11	
Grn Ratio	0.62	0.41		0.62	0.41		0.27	0.27		0.27	0.27	
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	0.1	3.2		1.0	9.2		0.6	2.6		0.4	0.9	
kB	0.6	0.9		0.8	0.9		0.5	0.6		0.5	0.6	
Q2	0.0	0.3		0.2	1.8		0.1	0.3		0.0	0.1	
Q Average	0.1	3.5		1.1	10.9		0.6	2.9		0.5	0.9	
Q Spacing	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Q Storage	0	0		0	0		0	0		0	0	
Q S Ratio												
70th Percentile Output:												
fB%	1.3	1.2		1.3	1.2		1.3	1.3		1.3	1.3	
BOQ	0.2	4.4		1.5	13.2		0.8	3.6		0.6	1.2	
QSRatio												
85th Percentile Output:												
fB%	1.7	1.5		1.6	1.4		1.7	1.6		1.7	1.6	
BOQ	0.2	5.4		1.9	15.7		1.1	4.5		0.8	1.6	
QSRatio												
90th Percentile Output:												
fB%	2.0	1.7		1.9	1.6		1.9	1.8		2.0	1.9	
BOQ	0.3	6.1		2.2	17.0		1.2	5.1		0.9	1.8	
QSRatio												
95th Percentile Output:												
fB%	2.6	2.1		2.4	1.7		2.5	2.2		2.5	2.4	
BOQ	0.3	7.3		2.7	18.7		1.6	6.2		1.2	2.3	
QSRatio												
98th Percentile Output:												
fB%	3.2	2.4		2.9	1.9		3.0	2.5		3.1	2.9	
BOQ	0.4	8.6		3.3	20.4		1.9	7.3		1.4	2.8	
QSRatio												

ERROR MESSAGES

No errors to report.

Number of lanes in opposing approach, No				
Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT	0.000	0.000	0.000	0.000
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	0.952	0.952	1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g				
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				
gq, (see Exhibit C16-4,5,6,7,8)				
gu=g-gq if gq>=gf, or = g-gf if gq<gf				
n=Max(gq-gf)/2,0)				
PTHo=1-PLTo				
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				
EL1 (refer to Exhibit C16-3)				
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				24.0
Conflicting pedestrian volume, Vped (p/h)				0
Pedestrian flow rate, Vpedg (p/h)				0
OCCpedg				0.000
Opposing queue clearing green, gq (s)				0.10
Eff. ped. green consumed by opp. veh. queue, gq/gp				0.004
OCCpedu				0.000
Opposing flow rate, Vo (veh/h)				129
OCCr				0.000
Number of cross-street receiving lanes, Nrec				2
Number of turning lanes, Nturn				1
ApbT				1.000
Proportion of left turns, PLT				1.000
Proportion of left turns using protected phase, PLTA				0.000
Left-turn adjustment, fLpb				1.000

Permitted Right Turns	
Effective pedestrian green time, gp (s)	24.0
Conflicting pedestrian volume, Vped (p/h)	0
Conflicting bicycle volume, Vbic (bicycles/h)	0
Vpedg	0
OCCpedg	0.000
Effective green, g (s)	24.0
Vbicg	0

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot		12	1624		0.01	0.178	289	0.04
Perm		0	316		0.00	0.444	140	0.00
Left	L	12				0.62	429	0.03
Prot								
Perm								
Thru	TR	360	3050		0.12	0.41	1254	0.29
Right								
Westbound								
Prot		101	1624	#	0.06	0.178	289	0.35
Perm		0	776		0.00	0.444	345	0.00
Left	L	101				0.62	634	0.16
Prot								
Perm								
Thru	TR	857	3086	#	0.28	0.41	1269	0.68
Right								
Northbound								
Prot								
Perm								
Left	L	31	1243		0.02	0.27	331	0.09
Prot								
Perm								
Thru	TR	129	1485	#	0.09	0.27	396	0.33
Right								
Southbound								
Prot								
Perm								
Left	L	23	1149		0.02	0.27	306	0.08
Prot								
Perm								
Thru	TR	46	1554		0.03	0.27	414	0.11
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.43
Total lost time per cycle, L = 15.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.51

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.03	0.62	8.2	1.000	429	0.50	0.1	0.0	8.4	A		
TR	0.29	0.41	17.7	1.000	1254	0.50	0.6	0.0	18.3	B	18.0	B
Westbound												
L	0.16	0.62	7.1	1.000	634	0.50	0.5	0.0	7.6	A		
TR	0.68	0.41	21.6	1.000	1269	0.50	2.9	0.0	24.5	C	22.8	C
Northbound												
L	0.09	0.27	24.8	1.000	331	0.50	0.6	0.0	25.4	C		
TR	0.33	0.27	26.5	1.000	396	0.50	2.2	0.0	28.7	C	28.1	C
Southbound												
L	0.08	0.27	24.7	1.000	306	0.50	0.5	0.0	25.2	C		
TR	0.11	0.27	24.9	1.000	414	0.50	0.5	0.0	25.5	C	25.4	C

Phone:
E-Mail:
Fax:

OPERATIONAL ANALYSIS

Analyst:	CFD
Agency/Co.:	Barr & Prevost
Date Performed:	3/18/2008
Analysis Time Period:	7:30 AM-8:30 AM
Intersection:	US 50 and Meadowlark
Area Type:	CBD or Similar
Jurisdiction:	Fairfax, Ohio
Analysis Year:	2008

Project ID: AM existing conditions
E/W St: US 50 N/S St: Meadowlark/Wooster Pike

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	11	285	59	91	765	11	28	14	202	21	16	35
% Heavy Veh	0	5	0	0	5	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	3	79	16	25	213	3	8	4	56	6	4	10
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	1	2	0	1	2	0	1	1	0	1	1	0
LGConfig	L	TR		L	TR		L	TR		L	TR	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol			20			5			100			10
Adj Flow	12	360		101	857		31	129		23	46	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs		0.119			0.008			0.876			0.609	
Peds Bikes	1			0			0		0	0		
Buses	0	2		0	2		0	0		0	0	
%InProtPhase	0.0			0.0								
Duration	1.00			Area Type: CBD or Similar								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ped Min g		3.2			3.2			3.2			3.2	